ABSTRACT

Title of Dissertation: THE INFLUENCE OF STRESS AND SOCIAL SUPPORT ON PARENTING BEHAVIORS AMONG LOW-INCOME FAMILIES: MEDIATIONAL PATHWAYS TO CHILDREN'S SOCIAL DEVELOPMENT

Catherine E. Kuhns, Doctor of Philosophy, 2019

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Economic stress been shown to compromise children's social development and undermine parenting behaviors in mothers of young children. A separate literature suggests that social support may attenuate the negative effects of maternal stress on parenting behaviors. Guided by the Family Stress Model and the Stress Buffering Model, this study examined the indirect pathways from maternal experiences of stress (economic and parenting) to children's social competencies and behavior problems longitudinally in a sample of children from the Early Head Start Family and Child Experiences Survey (Baby FACES). It also tested the moderating effects of two types of social support (instrumental and emotional) on the negative association between stressors (economic and parenting) and children's social skills. Using structural equation modeling (SEM) results demonstrated support for the Family Stress Model, such that economic stress (at age 1) was longitudinally and indirectly related to

children's social competencies and problem behaviors (at age 3) via observed maternal sensitivity (at age 2). That is, higher levels of economic stress were related to elevated levels of behavior problems and lower levels of social competencies because it increased parenting stress and decreased maternal sensitivity. However, there was no evidence that social support moderated the association between either type of stress and parenting. Findings are discussed in light of policy and programmatic efforts to broaden support of families and children by incorporating services that promote sensitive parent-child interactions and reduce maternal parenting stress.

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by

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2019

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Acknowledgements

I would like to express my sincere gratitude to my advisor Dr. Natasha Cabrera and the other past and present members of the Family Involvement Lab.

Thank you to the members of my dissertation committee: Dr. Brenda Jones Harden, Dr. Geetha Ramani, Dr. Gregory Hancock, Dr. Jerry West and Dr. Lea Dougherty for their insightful comments, questions, and assistance.

Lastly, I wish to thank my family and my husband for their enduring support and love that has allowed me to reach this point. I am forever grateful.

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Table 1. *List of Study Measures*

Role in Study	Construct	# of items	Scale	Range	Method of Assessment	Time
Dependent Variable	Child Social Competence	11	0-2	0-22	Parent Report	Age 3
Dependent Variable	Child Behavior Problems	31	0-2	0-62	Parent Report	Age 3
Independent Variable	Economic Stress	10	0-1	0-10	Parent Report	Age 1
Mediating Variable	Parenting Stress	11	1-5	11-55	Parent Report	Age 1
Mediating Variable	Observed Sensitivity	-	1-7	1-7	Observed	Age 2
Mediating Variable	Observed Intrusiveness	-	1-7	1-7	Observed	Age 2
Moderating Variable	Instrumental Support	7	1-3	7-21	Parent Report	Age 1
Moderating Variable	Emotional Support	6	1-3	6-18	Parent Report	Age 1
Control Variable	Depression	12	0-3	0-36	Parent Report	Age 1
Control Variable	Maternal Education (continuous)	1	-	-	Parent Report	Age 1
Control Variable	Household Income (continuous)	1	-	-	Parent Report	Age 1
Control Variable	Family Structure	1	0-1	-	Parent Report	Age 1
Control Variable	Teen Mother	1	0-1	-	Parent Report	Age 1
Control Variable	Move in the Past Year	1	0-1	-	Parent Report	Age 1
Control Variable	Program Type	1	0-1	-	Parent Report	Age 1

Table 2. *Descriptive Statistics of the Sample at Each Time Point*

	Time 1			Time 2			Time 3		
Variable	*n*	*%*	*M(SD)*	*n*	*%*	*M(SD)*	*n*	*%*	*M(SD)*
Mother age	678		22.9(.33)	460		25.5(.26)	349		26.22(.26)
Father age	600		24.7(6.5)						
Mother years of education	665			456			345		
< HS degree		42			38			33	
HS degree		31			33			37	
Some college		23			23			23	
Bachelor's or higher		4			6			7	
Father years of education	596								
< HS degree		44							
HS degree		38							
Some college		13							
Bachelor's or higher		5							
Mother ethnicity	705								
Black		19							
White		40							
Latina		36							
Other		5							
Father ethnicity	709								
Black		22							
White		33							
Latino		39							
Other		6							
Teen Mother	716	49							
Two Parent Family	638	49		475	53		361	53	
Household Income	623			434			316		
$0-$10,000		25			20			25	
$10,001-$20,000		37			39			39	
$20,001 +		38			41			36	
Public Assistance ((TANF, food stamps, SSI)	650	71		457	74		340	72	
Child gender	778								
Male		53							
Female		47							
Child low Birth Weight	546	7							
Program Type	736			509			384		
Center		45			46			51	
Home		50			43			39	

Both	4	11	10
Family Childcare	>1	0	0

Table 3. *Descriptive Statistics of Variables of Interest at Each Time Point*

	Time 1		Time 2		Time 3	
Variable	*n*	*M(SD)/%*	*n*	*M(SD)*	*n*	*M(SD)*
Economic Stress	653	2.33(2.57)	456	2.18(2.62)	340	2.02(2.56)
Parenting Stress	643	19.56(.289)	512	19.18(.359)	386	18.37(.428)
Emotional Support	656	2.54(.55)	-	-	-	-
Instrumental Support	650	2.21(.68)	-	-	-	-
Intrusiveness	-	-	511	3.50(1.22)	378	2.99(1.24)
Sensitivity	-	-	510	4.28(1.19)	378	4.56(1.03)
BITSEA PB	-	-	516	12.2(7.53)	389	11.0(7.56)
BITSEA SC	-	-	515	16.9(3.43)	390	17.7(3.26)
CES-D (total score)	653	5.21(5.50)	440	3.92(5.74)	388	3.88(5.72)
Teen Mother	716	49%				
Move in the Past Year	654	33%	456	28%	340	25%

Note. Dashed lines indicate that questions were not asked or variables were not observed at that time point.

Table 4. *Intercorrelations of Model Variables*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Economic Stress	-	.231**	-.007	.053	.125*	-.041	-.177**	-.257**	.237**	-.006	-.057	-.082*	.111**	-.055	.098*
2. Parenting Stress		-	-.226**	.171**	.197**	-.176**	-.166**	-.230**	.144**	-.207**	-.101*	-.039	-.016	-.094*	.011
3. Sensitivity			-	-.707**	-.207**	.263**	.064	.032	.025	.169**	.122*	.176**	.070	.004	-.046
4. Intrusiveness				-	.127*	-.159**	-.064	-.002	.029	-.136**	-.084	-.156**	-.026	-.026	-.052
5. Ch. Problem Behavior					-	-.377**	-.114*	-.210**	.304**	-.172**	-.074	-.093	-.035	.051	-.059
6. Ch. Social Competence						-	.026	.085	-.081	.106*	.083	.099	.052	.012	.031
7. Instrumental Support							-	.627**	-.049	.001	.077	.013	.034	.168*	.087*
8. Emotional Support								-	-.185**	.064	.123**	-.021	.023	.105**	.126**
9. CES-D									-	-.009	-.091*	-.049	.000	.001	-.123**
10. Mother Education										-	.054	.129**	.053	-.233**	-.013
11. Income											-	.021	-.036	-.056	.217**
12. Program type												-	.075	.085*	-.242**
13. Move in the past year													-	.023	-.021
14. Teen Mom														-	-.116**
15. Two Parent															-

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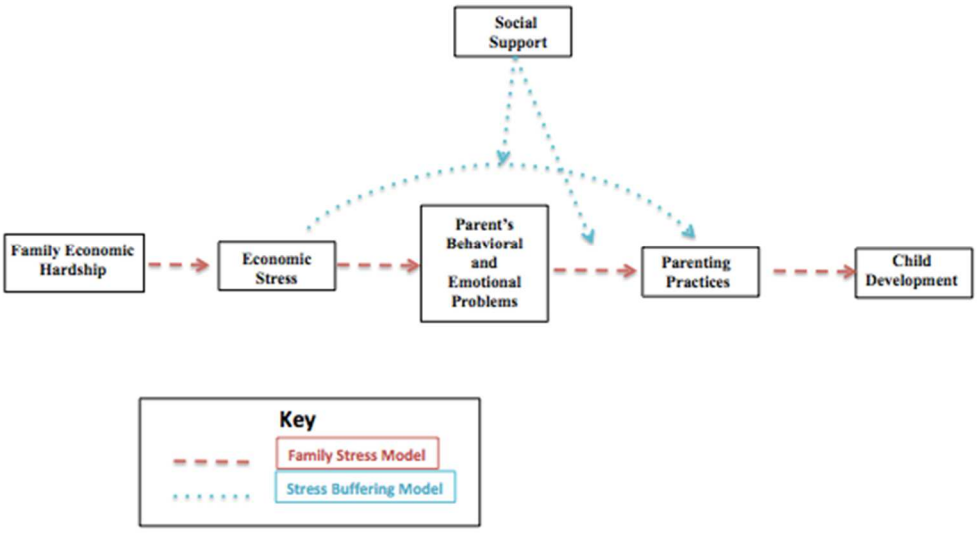

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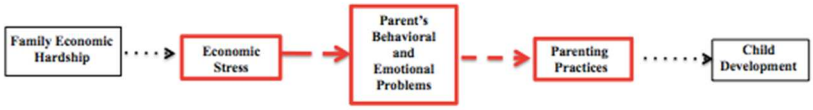

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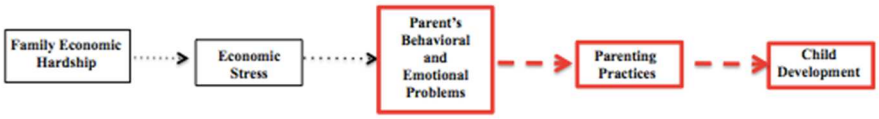

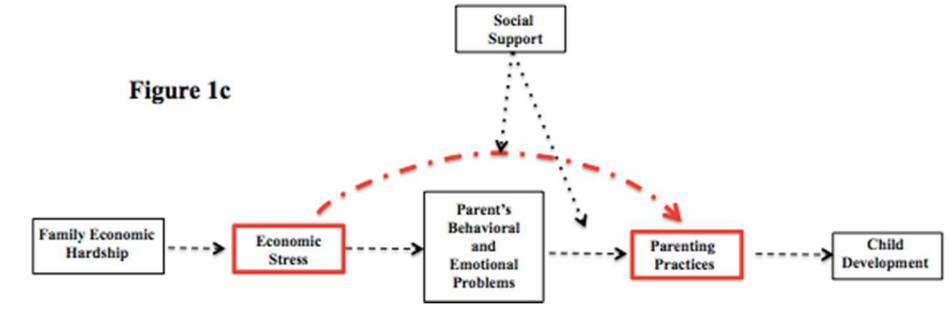

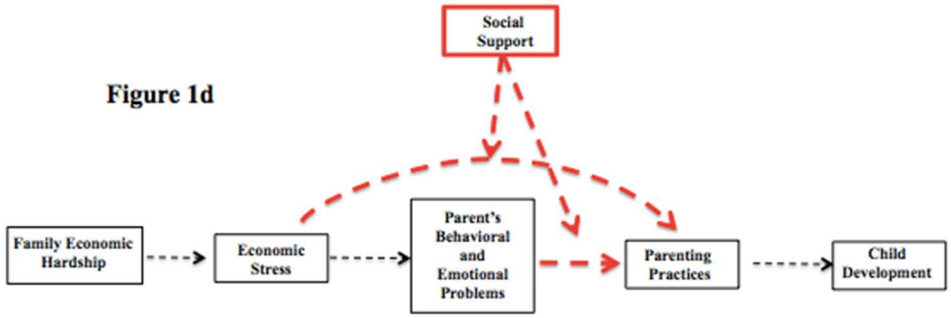

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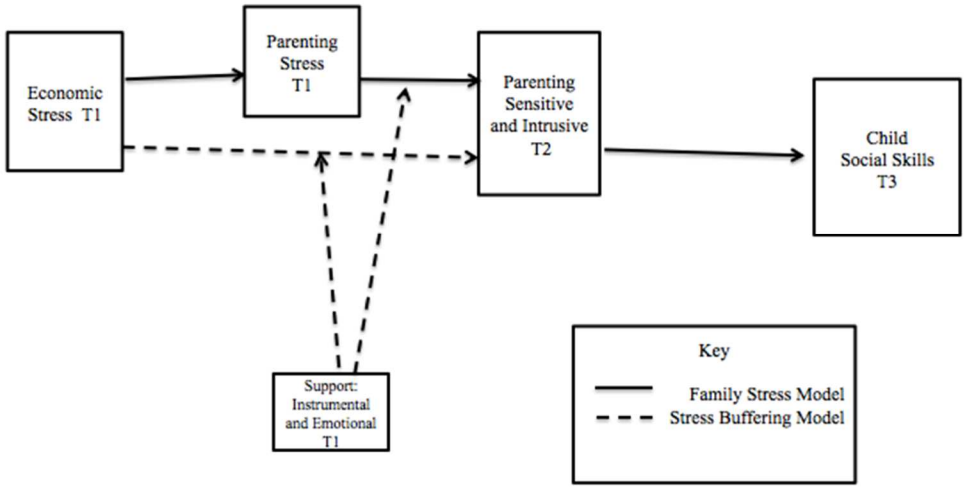
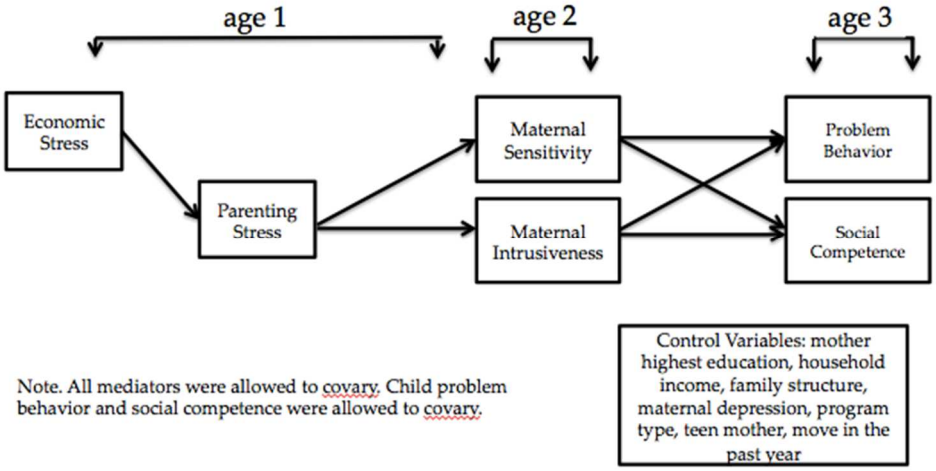
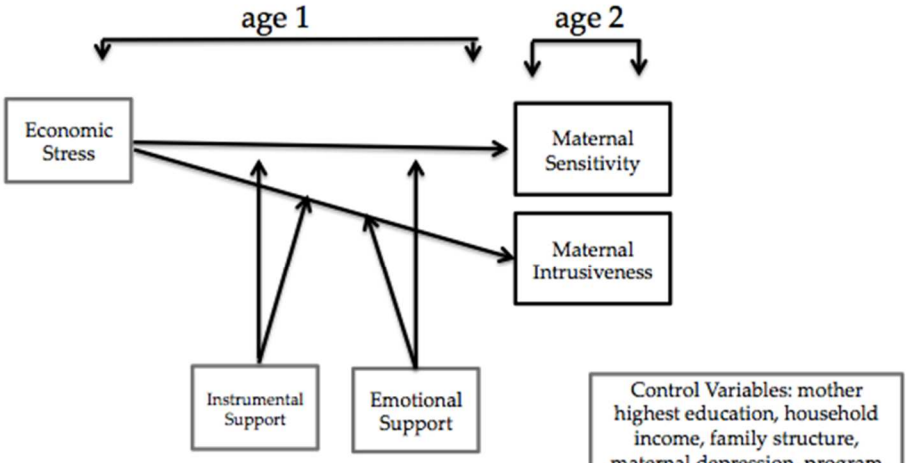


Figure 3. Conceptual Model for Research Question 1



Note. All mediators were allowed to covary. Child problem behavior and social competence were allowed to covary.

Figure 4. Conceptual Model for Research Question 2



Note. Maternal sensitivity and intrusiveness were allowed to covary.

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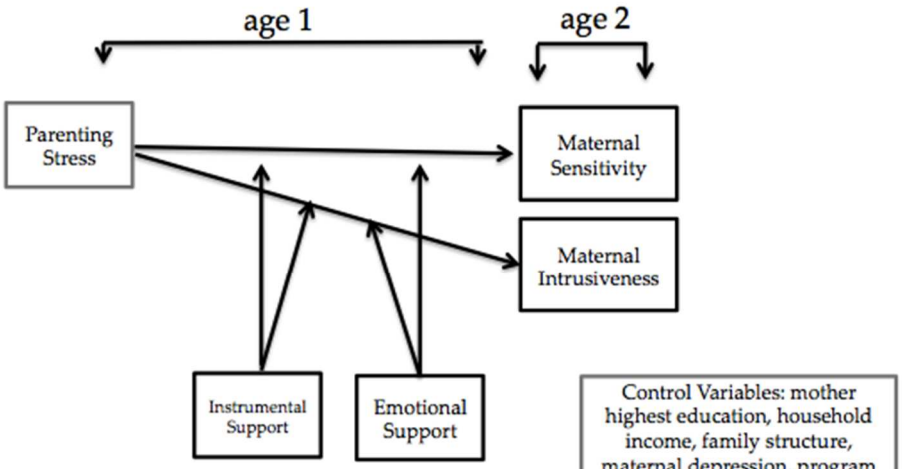
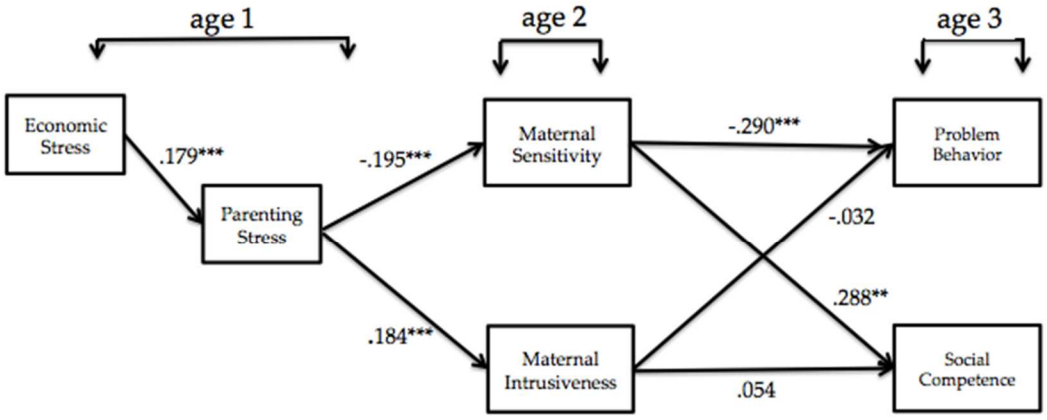


Note. Maternal sensitivity and intrusiveness were allowed to covary.

Figure 6. Path Coefficients for Model 1



Note. Control variables include mother highest education, household income, family structure, maternal depression, program type, teen mother, move in the past year.
*p <.05, **p <.01, *** p <.001

Chapter 1: Introduction

Statement of the Problem

Mothers of young children face unique stressors (e.g., parenting and economic stress), which have been shown to have robustly negative effects on children's social development (Neppl, Senia, & Donnellan, 2016). While the exposure to moderate levels of stress is normative and indeed sometimes protective (Seery, Holman, & Silver, 2010), stress becomes problematic when the accumulation of stressors over time exceeds parents' coping abilities and spills over into the realm of parenting and parent-child interactions. High levels of parenting and economic stress have been associated with lower levels of social competence in infants and toddlers (Mistry, Vandewater, Hustori, & McLoyd, 2002; Sparks, Hunter, Backman, Morgan, & Ross, 2012), heightened externalizing behavior problems, including aggressive and delinquent behaviors, and internalizing problems such as depression in young children (Baker, Heller, & Henker, 2000; Haapsamo et al., 2013; Murphy, Marelich, Armistead, Herbeck, & Payne, 2010).

The theoretical mechanisms that link stressors to children's wellbeing are often indirect. Drawing from the family stress model, economic stress can impact children's outcomes indirectly through its effects on family processes (e.g., parenting stress, anger, depression, anxiety) which in turn affect parenting practices (e.g., fewer family routines, harsh and inconsistent discipline) and children's well being (Conger & Donnellan, 2007; Edin & Kissane, 2010; Manuel, Martinson, Bledsoe-Mansori, & Bellamy, 2012). Parents who experience economic stress are more likely to exhibit parenting stress, which can have a measured negative impact on their parenting

behaviors and the quality of their interactions with their children (Administration for Children and Families Office of Planning, Research & Evaluation (ACF-OPRE), 2006; Alegria et al., 2007; Beeber et al., 2010; Bugental, & Happaney, 2004; Campbell, Morgan- Lopez, Cox, & McLoyd, 2009; Horwitz, Briggs-Gowan, Storfer-Isser, & Carter, 2007; Manuel et al., 2012; Zimmerman & Katon, 2005). Parents who are stressed are also likely to be more intrusive (i.e., overcontrolling) in their interactions with their children (Mills-Koonce et al., 2009); use harsh discipline (East, Chien, & Barber, 2012; Pereira, Negrão, Soares, & Mesman, 2015; Rickets & Anderson, 2008); use psychological aggression (Park, Ostler, & Fertig, 2015); and abuse or neglect their children (Maguire-Jack & Negash, 2016).

The negative effects of stressors on parenting and children's wellbeing also depend on contextual factors, which can either protect children from the negative effects of stress or exacerbate its influence. Efforts to understand the contextual factors that may buffer children from the negative effects of stressors have shown that social support is an important protective factor (Jackson, Brooks-Gunn, Huang, & Glassman, 2000; Kang, 2013). The stress buffering model posits that social support may help buffer the negative influences of stress on parenting. A wealth of research has demonstrated that social support has a positive effect on parent's health and well-being, which in turn influences their parenting behaviors (Albrecht, Goldsmith, & Thompson, 2003). For example, high levels of social support (e.g., having someone to talk to) have been associated with higher levels of sensitive parenting in low-income families with young children (Lee, Anderson, Horowitz, & August, 2009). Social support may be particularly critical for low-income families with young children who

undoubtedly face higher levels of economic stress and may experience specific types of parenting stress associated with parenting very young children (Barnett, 2008).

This literature has significant implications for both policy and practice, emphasizing the importance of providing parents with the appropriate supports that reinforce warm, nurturing interactions with their children. Yet, this literature suffers from several limitations. First, most research on the impact of support for parents and children includes only one measure of support (e.g., instrumental or emotional), or global measures of supports (e.g., both emotional and instrumental), making it difficult to understand what types of support are most effective against specific stressors. That is, few studies address the importance of matching stressors to supports, despite the emphasis on such a practice in Cohen and Will's (1985) seminal work on social support. The mismatch of stressors and supports may be one reason why the evidence is mixed, albeit with small effect sizes (Lutz et al., 2012). For example, it is unlikely that financial support (e.g., having someone who could lend you $50) will attenuate feelings of social isolation a new parent may experience; rather, emotional support may serve as a better buffer. While there is not enough guidance in the literature to confirm which supports serve as buffers for specific stressors, including multiple types of stress and support is an important step for understanding the role of stress by support specificity.

Furthermore, a majority of the studies are cross-sectional and correlational in nature, making it impossible to discern causality. A wealth of research has demonstrated that the experience of stress in early childhood (like poor economic circumstances or low levels of maternal warmth) is associated with a host of long

term repercussions for children's mental, emotional, and behavioral health (Yoshikawa, Aber, & Beardslee, 2012). Research that employs a longitudinal design allows for the testing of moderation and mediation, and emphasizes the impact of early stress on later development (Conger, Conger, & Martin, 2010; Hanson et al., 2015; Masarik & Conger, 2017).

Lastly, research on the stress-buffering nature of social support has primarily focused on middle-income samples (e.g., Heberle, Krill, Briggs-Gowan, & Carter, 2015; Zaidman-Zait, et al., 2017) and has paid less attention to low-income families with young children. This is an important omission because existing research shows that low-income individuals are more likely to be socially isolated and have lower levels of social support compared to their middle-income counterparts (Antonucci, 2001). Furthermore, low-income families often face economic hardships such as food insecurity, residential instability, lack of medical insurance, and disconnected utilities due to unpaid bills (Barajas-Gonzalez & Brooks-Gunn, 2014; Boushey, Brocht, Gundersen, & Bernstein, 2001; Gershoff, Aber, Raver, & Lennon, 2007). Moreover, most scholars agree that parenting stress is particularly high for parents of young children (Kuczynski & Kochanska, 1990), and tends to decrease as child age (Williford, Calkins & Keane, 2007). America's youngest children are among the most likely to live in low-income or poor households; 47 percent of children age five years or younger live in low-income households (Jiang, Ekono, & Skinner, 2016). Given the evidence that a large proportion of very young children live in families who experience economic hardship, and evidence that suggests parents with young children also tend to experience parenting stress, research that tests the role of social

support against both types of stressors in low-income families with young children is sorely needed.

Current Study

The current study integrates two theoretical frameworks and a longitudinal design with the goal of understanding the pathways by which economic stress is linked to parenting stress, parenting and child social development. It also tests the buffering role of instrumental and emotional support. Per the family stress model, economic stress indirectly impacts parenting through its effects on family processes (e.g., parenting stress) and parenting behaviors (e.g., observed sensitivity and intrusiveness). The stress buffering model suggests that social support (i.e., instrumental, emotional) protects parents and children against the negative effects of stress on parenting. Given that negative parenting practices lead to higher levels of externalizing and internalizing problems, compromised social skills, and poor academic performance, particularly in low-income samples, the buffering role of social support merits further attention.

The current study uses data from the Early Head Start Family and Child Experiences Survey (Baby FACES) 2009, a longitudinal descriptive study of children and families enrolled in Early Head Start (EHS) programs. The Baby FACES study includes a nationally representative sample of 89 programs and 976 children, who mostly enrolled in EHS in the spring of 2009. This dataset is longitudinal in nature, and as with all longitudinal datasets, it experienced participant attrition over time, albeit higher than expected. Still, this dataset remains best suited for this study because it the only large, longitudinal, and recent dataset that includes a low-income

sample of families with infants and toddlers. Given that longitudinal data on low-income families with young children is difficult to collect, and thus rare, Baby FACES allows for the examination of how early experiences influence later outcomes for very young children. Moreover, Baby FACES includes comprehensive data from multiple sources including parents, teachers, home visitors, and direct child assessments, as well as videotaped parent-child interactions. Such rich data allow for multiple reporters and assessment types and helps address the problem of shared variance in measurement. Finally, Baby FACES includes families who take part in a federally funded program, making participants the target of federal policies geared towards families with young children. As such, using this dataset increases the relevancy of this study from the policy perspective, as results on the effects of stress and support on mothers and their children may be interpreted in the context of an existing federal program. Given that supporting parents is a main goal of Head Start, gaining a better understanding of the existing sources of support families enrolled in Head Start have is critical for optimizing the services provided through the program, and makes Baby FACES an ideal dataset to address these research questions.

Study Objectives

Few studies have examined the ways in which different types of stress and support interact to impact parenting and child outcomes longitudinally in low-income families. Therefore, there's a dearth of research on the factors that support low-income parents of young children. This study has three objectives:

The **first objective** is to examine the mediating role of parenting stress (used as a measure of family processes) and parenting quality (observed sensitivity and

intrusiveness) in the association between economic stress and child outcomes (social competence and behavior problems). Findings that confirm mediation will lend support for the family stress model.

The **second objective** is to examine whether specific types of social support (emotional and instrumental) moderate the associations among mothers' economic and parenting stress and their parenting quality. There is some literature to suggest specificity of fit when matching support to stressors. Specifically, there are two studies that suggest emotional support buffers against parents' psychological distress, but not their economic stress (Heberle et al., 2015; Thompson, Flood, & Goodvin, 2006). However, because there is lack of guidance in the literature about what types of support are more protective for what type of stressors, the direction of the hypothesis is not specified. It remains an empirical question as to whether or not a specific social support (e.g., emotional support) will buffer a specific stressor (e.g., parenting stress) better than a different pairing (e.g., instrumental support and parenting stress). Evidence of social support as a moderator will provide evidence for the stress buffering model and clarify the role social support has for mothers' parenting and child outcomes in this sample of Early Head Start children (Lee & Rispoli, 2017).

Research Questions and Hypotheses

Using a sample (n=586) of children enrolled in Early Head Start and their mothers, this study will examine (1) the associations among economic stress, parenting stress, parenting quality, and toddlers' social competence and behavior

problems and (2) the moderating role of two types of social support between mothers' economic and parenting stress and parenting quality.

As such, the following research questions and hypotheses are put forth.

Research Question 1: Is the association between economic stress and children's social skills mediated by maternal parenting stress and the quality of the mother-child relationship? (see Figure 3)

Hypothesis 1a: Economic stress during infancy (at age 1) will be associated with more behavior problems in early childhood (age 3) *because* it will increase parenting stress and maternal intrusiveness and decrease maternal sensitivity (mediators).

Hypothesis 1b: Economic stress during infancy (age 1) will be associated with less social competence in early childhood (age 3) *because* it will increase parenting stress and maternal intrusiveness and decrease maternal sensitivity (mediators).

Research Question 2: Do instrumental and emotional support moderate the associations between *economic stress* and parenting quality? (see Figure 4)

Hypothesis 2a: The negative association between economic stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *instrumental* support than for mothers with more instrumental support.

Hypothesis 2b: The negative association between economic stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *emotional* support than for mothers with more emotional support.

Hypothesis 2c: The positive association between economic stress during infancy (age 1) and intrusiveness (age 2) will be stronger for mothers with less *instrumental* support than for mothers with more instrumental support.

Hypothesis 2d: The positive association between economic stress during infancy (age 1) and maternal intrusiveness (age 2) will be stronger for mothers with less *emotional* support than for mothers with more emotional support.

Research Question 3: Do instrumental and emotional support moderate the association between *parenting stress* and parenting quality? (see Figure 5)

Hypothesis 3a: The negative association between parenting stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *instrumental* support than for mothers with more instrumental support.

Hypothesis 3b: The negative association between parenting stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *emotional* support than for mothers with more emotional support.

Hypothesis 3c: The positive association between parenting stress during infancy (age 1) and maternal intrusiveness (age 2) will be stronger for mothers with less *instrumental* support than for mothers with more instrumental support.

Hypothesis 3d: The positive association between parenting stress during infancy (age 1) and maternal intrusiveness (age 2) will be stronger for mothers with less *emotional* support than for mothers with more emotional support.

Contribution to the Field

This research has important implications for researchers, policymakers, and program staff. At the research level, the results of this project will reveal the moderating effects of different types of social support on associations among economic stress, parenting stress and quality of parenting thus helping to clarify the mixed findings in the existing literature. Further, it will extend research on low-income families with young children by showing the relative importance of different types of social support for buffering the effects of both parenting and economic stress on indicators of parenting quality. Moreover, this study employs a longitudinal design, which emphasizes the strong link between stress experienced in infancy and later developmental outcomes. Lastly, as this is the first study to test the family stress model and the stress buffering model, this research may have implications for building theory regarding domain specificity of stressors and supports. The findings have the potential to inform a more targeted approach regarding the specific stressors that can best protect children from the negative effects of specific stressors.

At the policy level, this research addresses a demographic and mental health imperative and has the potential to inform social policy at the federal, state, and local levels designed to promote positive parenting and positive child development in vulnerable populations. Such research on the intersection of maternal stress and social support has vast implications for policymakers interested in providing effective support for mothers of young children that can minimize maternal parenting stress and consequently the use of harsh, intrusive, and punitive parenting strategies. The findings of this study may identify sources of social support that are more impactful

than others, and provide evidence that a low-cost intervention of building parents' own social support networks is important to help mitigate the effects of stress on parent's emotional well-being and mental health. Interventions aimed at improving certain types of social support can easily be incorporated into the child welfare visits and comprehensive measures of social support could be added to existing family needs assessments. Specific government agencies that would benefit from this research include the Office of Head Start, the Office of Child Care, the Children's Bureau, and the Health Resources and Services Administration, all of whom work to promote children's early development and family well-being.

At the program level, this research—in particular findings showing that mothers parent better when they have social support—may also provide information that could lead to increased capacity of existing systems, such as Early Head Start programs, childcare centers, and home visiting programs that seek to engage with families in meaningful ways. By more clearly identifying the pathways from types of maternal stress to parenting and child outcomes, this research could help program staff identify points of intervention, such as screening parents for both stress and supports available upon entry into the program. It may also help program staff provide more specific insight on how best to build parents' social networks and deliver support to parents facing these obstacles. For example, taking a two-pronged approach, such programs could aim to build parents' informal support networks while also disseminating information on social services that would provide more formal family support, such as economic assistance.

Chapter 2: Review of the Literature

This review provides an in depth examination of the literature over the past 30 years that links types of parental stress (economic and parenting) to children's development in early childhood (0-5) and the ways in which types of social support buffer children from the negative effects of stressors on parenting. This review focuses on low-income families because research shows that being low-income, having lower levels of education, and certain neighborhood factors, such as living in a poor or dangerous neighborhood are contributors to stress (Barajas-Gonzalez & Brooks-Gunn, 2014). Moreover, this review emphasizes early childhood because a wealth of research has shown that children's early environments, and in particular the interactions they have with their caregivers, have far reaching effects for later development (National Scientific Council on the Developing Child, 2007). In cases where little literature exists on low-income families with young children, I draw from research that includes middle-income samples or slightly older children to provide a comprehensive picture of this area of research. I provide a thorough and analytical examination of these processes with an eye toward understanding what we know, what is missing, and where there are gaps in this literature. Toward this end, I organize this review in the following way: (1) present a review of the theoretical frameworks, in particular the family stress model and the stress buffering model; (2) examine the empirical evidence that supports the family stress model; (3) review the empirical evidence regarding specific meditational pathways (parent's emotional and behavioral well being and parenting practices); (4) review the empirical evidence of the additional direct pathway from economic stress to parenting; (5) examine the

empirical evidence that supports the stress buffering model, with a focus on instrumental and emotional support; and (6) identify future directions and conclusions.

Theoretical Framework

This study integrates two theoretical perspectives: first, the family stress model, which emphasizes the ways in which economic and parenting stress influence parenting and, more distally, child outcomes. Second, the stress buffering model, which demonstrates how social support may moderate the relationship between parental stress and parenting. Each model is reviewed in detail below, and represented in Figure 1.

The Family Stress Model. The family stress model (Conger & Elder, 1994), represented by the dashed horizontal lines in Figure 1, is a framework for understanding how stress compromises family functioning and child development. Originally designed to explore how financial problems influenced the lives of rural families going through severe economic downturn in the 1980's (Conger, Conger, & Martin, 2010; Conger & Elder, 1994), the family stress model posits that economic hardships (i.e., things associated with being low-income such as losing a job or not having enough food) generate economic pressure, or stress (i.e., day to day strains and hassles such as difficulty paying a bill or purchasing something you need), which compromise parents' mental health and interparental relationships (e.g., conflict between parents) and disrupts parenting. According to this model, the experience of economic pressure or stress gives psychological meaning to economic hardship (Conger & Conger, 2002; Conger & Elder, 1994). When economic pressure is high,

parents are at an increased risk for emotional distress (e.g., parenting stress, anger, depression, anxiety) and are more likely to use harsh and punitive parenting strategies. As such, for children, the risk is not in the economic hardships, per say, but in the response of the parents to the hardships and pressure.

Since its inception, the family stress model framework has been successfully applied with other environmental stressors aside from economic stressors and is useful for understanding how stress experienced by the family, and specifically the parents, can impact a child's health and wellbeing (Masarik & Conger, 2017; Neppl et al., 2016). Scholars interested in how maternal stress compromises mothers' emotional well-being and parenting (and subsequently child development) often use the family stress model (Campbell, Matetstic, von Stauffenberg, Mohan, & Kirchner, 2007; Feder et al., 2009).

In a call for future research, Conger, Conger and Martin (2010) identified an area of need as testing possible moderators in the family stress model, such as social support, which may buffer the adverse effects of SES-related family stress. This call was echoed in Massarik and Conger's (2017) review of the literature. This notion of social resources as a moderator of the negative influence of economic adversity (Conger & Conger, 2002; Conger, Rueter, & Elder, 1999) is explored further below using the stress buffering model framework.

The Stress Buffering Model. Scholars using the stress buffering model extend the family stress model to posit that social supports (e.g., instrumental, emotional) may help buffer the negative influences of stress on parenting. Originally developed by Cohen and Wills (1985), the stress buffering model suggests that social

support provides both psychological and material resources to cope with stress, and therefore may buffer the negative effects of stress on parenting. A buffering effect is demonstrated when there is a statistically significant interaction between stress and social support, and therefore inherent in this model is the notion that only those who face adversity or have high levels of distress benefit from social support. In a separate line of research, some scholars use the main effects model to postulate that social support has a beneficial effect regardless of whether individuals are under stress (Cohen, Gottlieb, & Underwood, 2004). For the purpose of this review, I will focus on the stress buffering model, which assumes that the negative effects of stress on parenting are greater for individuals with low levels of social support (Cohen & McKay, 1984). Because the stress buffering model posits that social support buffers the negative effect of stress on parenting, in order to fully integrate these two models I have included a direct path from economic stress to parenting (see Figure 1). While the path from economic stress to parenting is mediated by parent's emotional and behavioral health (and in this study, parenting stress) per the family stress model, the integration of the stress buffering model calls for the addition of a direct path from economic stress to parenting to test the moderating role of social support on mothers' stress (both economic and parenting).

Overall there is mixed evidence for the stress buffering model. Some studies have shown support for the model (e.g., Ajrouch, Reisine, Lim, Sohn, & Ismail, 2010; Taylor, Conger, Robins, & Widaman, 2015) while others do not (Manuel et al., 2012), though rarely are social support and stress defined the same way across studies. A growing body of literature using low-income samples has demonstrated

that social support may only operate as a stress buffer for individuals who experience clinical levels of distress (Aslund, Larm, Starrin, & Nilsson, 2014; Ayala-Nunes, Nunes, & Lemos, 2017). Cohen and Wills (1985) allude to the notion that a given support must match a given stressor, such that "there must be a reasonable match between coping requirements and the available support in order for buffering to occur…buffering will be observed when the support functions measured are those that are most relevant for the stressors faced by the person" (pg. 314). As such, I highlight whether studies couple stressors and supports in theoretically appropriate ways throughout this review.

Economic and Parenting Stress

Parenting and economic stress influence daily life for low-income parents of young children and undermine parents' ability to employ warm, nurturing strategies with their young children. Yet, parenting stress is conceptually different than economic stress in that in centers on the parenting role rather than external economic conditions. Parenting stress, generally defined as the difficulties that arise from the demands of being a parent, is born of situations in which parents or children create difficult or challenging circumstances through their actions, expectations, or needs (Anthony et al., 2005; Crnic, Gaze, & Hoffman, 2005). While moderate levels of stress are normative, stress associated with being a parent becomes problematic when the accumulation of stressors over time exceeds parents' coping abilities and spills over into the realm of parenting.

In contrast, economic stress is typically measured by asking parents to report on the degree of difficulty in "making ends meet," whether or not they have enough

money for different needs, such as food, a car, medical care, or recreational activities, or whether or not they have been forced to make economic adjustments in response to financial difficulties (Conger, Ge, Elder, Lorenz, & Simons, 1994). A similar term often used in the literature is "material hardship," measured as the deprivation related to health and wellbeing such as hunger, housing quality, ability to pay bills, and access to adequate medical care (Gershoff et al., 2007).

Moreover, in many cases, parenting stress may be a consequence of economic stress. Strong empirical evidence demonstrates that parents who face financial difficulties and experience chronic stressors associated with being low-income often suffer from emotional distress (Administration for Children and Families Office of Planning Research & Evaluation (ACF-OPRE), 2006; Alegria et al., 2007; Beeber et al., 2010; Campbell et al., 2009; Manuel et al., 2012; Zimmerman & Katon, 2005), and a significant body of work has demonstrated that parenting stress is as an indicator of parents' emotional well-being (Berger, Paxson, & Waldfogel, 2009). The Parenting Stress Index (PSI; Abidin, 1995) is the most frequently used measure of parenting stress, and includes three subscales, one of which captures parental distress. This subscale includes a range of items intended to measure the distress a parent experiences in his/her role as a parent specifically. However, many of the items overlap with other measures of depression and a significant body of research has found that parenting stress and depressive symptomology often correlate (Farmer & Lee, 2011; Leigh & Milgrom, 2008; Sidor, Kunz, Schweyer, Eickhorst, & Cierpka, 2011). It should be noted that economic stress does not necessarily have to precede parenting stress. Clearly parents who do not experience economic stress may still

report high levels of parenting stress. However, the family stress model provides a theoretical basis for including parenting stress as a mediator on the relation of economic stress and parenting. Still, there is a paucity of literature that tests parenting stress as a mediator, and therefore this pathway merits further investigation. As such, I use parenting stress as a mediator of the relationship between economic stress and parenting quality.

Empirical Evidence for the Family Stress Model

A number of studies have tested the family stress model and found support for the meditational pathways it proposes (Conger & Donnellan, 2007). Most of these studies focus on middle childhood or adolescence (e.g., Conger et al., 1993; Mistry et al., 2002; Solantaus, Leinonen & Punamäki, 2004), despite evidence that suggests the link between economic hardship and child development is stronger for young children compared to adolescents (Duncan & Brooks-Gunn, 1997). One important exception, Yeung and colleagues (2002) tested the family stress model using a sample of 753 preschool children and found that economic stress was associated with children's behavior problems primarily through maternal emotional distress and punitive parenting practices. Moreover, the authors tested numerous child outcomes, and found support for different mediating mechanisms depending on child outcome. That is, in regard to children's social skills and behavior problems, maternal emotional distress was the primary mediating mechanism, while indicators of child cognitive ability were mediated through the home environment (Yeung, Linver, & Brooks-Gunn, 2002).

Other research shows similar findings. Mistry and colleagues (2004) used a longitudinal design to study the impact of economic well-being during the first three years of life using a sample of 1,363 toddlers and their mothers. Guided by the family stress model, the researchers used an SEM framework to demonstrate that INR (income to needs ratio) had a differential effect on children's cognitive and socio-emotional outcomes, such that it directly affected children's cognitive and achievement related outcomes more so than behavioral outcomes, especially among children from the poorest families. That is, income was found to influence children's cognitive outcomes above and beyond what could be explained through family processes (e.g., maternal sensitivity) whereas the relationship between income and behavioral outcomes was completely mediated through family processes (Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004).

Another study using a longitudinal design and an observed measure of parenting behaviors found similar results. Neppl and colleagues (2016) employed the family stress model to examine the associations of economic stress, parental emotional distress, couple conflict, parenting at age three to five, and child behavior problems at age six to ten using a sample of 273 mostly White mothers, fathers and their toddlers. Harsh parenting was measured via direct observations when children were three, four, and five-years-old during a videotaped puzzle and clean-up task. Parents were also asked to report on their levels of emotional distress (i.e., depressive symptoms, anxiety, and hostility) and economic stress, (i.e., unmet material needs, ability to make ends meet, and making cutbacks during this time) when children were two-years-olds. Using structural equation modeling, results demonstrated that parent-

reported economic stress measured when children were two-years-old was indirectly related to both maternal and paternal harsh parenting practices when children were three-years-old via parents' emotional distress ($\beta = .06$). Taken together, these findings suggest that, for young children, economic hardship can reach children in multiple ways, such that effects of poverty on the children's learning environments are more likely to impact language and cognitive skills, while economic risk that affects parenting may be more likely to influence behavior problems and social competence (Hartas, 2011; Yeung et al., 2002).

The mediating role of parent's emotional and behavioral well-being on the association between stressors and parenting. A number of studies test select mechanisms, or meditational pathways, when using the family stress model. For example, the role of parents' emotional well-being and distress as a mediator of economic stress and parenting is often investigated, though it is conceptualized differently across studies, from parenting stress, to depression and anxiety (see Figure 1a). However, despite the diverse conceptualizations, a large body of literature supports the notion that economic stress undermines parenting by compromising parents' emotional well-being and in some cases, increasing parenting stress. For example, one early study of low-income African American and European American inner-city families (N=429) found that primary caregivers' (the majority mothers) economic stress (i.e., difficulty paying bills) reduced caregivers' quality of parenting behavior (mothers' self-reports of encouragement, involvement in outside activities, supervision of child, and proactive prevention) indirectly via maternal depressed mood (Elder, Eccles, Ardelt, & Lord, 1995). For European Americans, maternal

depressive symptoms fully mediated the association between maternal perception of economic stress and maternal reports of parenting. For African American mothers, maternal depressive symptoms partially mediated the association. However, the data were cross-sectional and used maternal report for all measures, highlighting the problem of shared variance and suggesting that these findings are exploratory, at best.

A study of a subsample of poor, rural mothers (n = 1,142) and their toddlers drawn from a larger longitudinal study (The Family Life Project) found similar results. Newland and colleagues (2013) tested the longitudinal associations of economic stress, maternal psychological well-being and parenting using the family stress model framework. Economic pressure was measured when children were 15 months-old using the Economic Strain Questionnaire (Conger & Elder, 1994). When children were 24 months of age, mothers reported on their own psychological symptoms, including depression, somatization, and anxiety. Maternal parenting was coded from mother-child interactions during a puzzle task when children were 36 months-old. Using SEM, results indicated that the association between economic stress and sensitive, supportive parenting was mediated by maternal anxiety and depressive symptoms (Newland, Crnic, Cox, & Mills-Koonce, 2013).

Finally, studies that include at-risk samples demonstrate similar results. Linver, Brooks-Gunn, and Kohen (2002) examined the associations of economic stress (a composite of income to needs ratio at child age 1 and 2), maternal emotional distress (depression, anxiety, sleep disturbances at child ages 1 and 2), and observed parenting practices (warmth, control, punitiveness) at 30 months in a sample of 493 White and African American low birth weight premature infants and their mothers.

Results demonstrated that maternal emotional distress mediated the pathway from maternal economic stress to observed parenting practices. Taken together, these studies offer empirical support for the family stress model such that indicators of mental health (e.g., parenting stress, depression) often mediate the association between economic stress and parenting. Again, it should be noted that economic stress does not necessarily have to precede parenting stress. Clearly parents who do not experience economic stress may still report high levels of parenting stress. However, the family stress model provides a theoretical basis for including parenting stress as a mediator on the relation of economic stress and parenting. Moreover, a paucity of literature remains on the investigation of these pathways in samples of young children.

The mediating role of parenting practices on the association between parent's well-being and children's outcomes. In a separate line of study, some researchers choose to focus on the mechanism of parenting and the mediating role it plays on the relationship between parent's emotional well-being (in this study conceptualized as parenting stress) and child outcomes (see Figure 1b). As with economic stress, a significant body of work has found evidence that parenting operates a mediator on the association of parenting stress and children's social competencies and behavior problems. Parents who report higher levels of parenting stress lack warmth and responsiveness in interactions with their children, and are more likely to employ inconsistent and punitive discipline strategies (Bayer, Sanson, & Hemphill, 2006; Crawford & Manassis, 2001; Karrass, VanDeventer, & Braungart-Rieker, 2003; Pinderhughes, Dodge, Bates, Pettit, & Zelli, 2000). However, many of

these studies use upper-middle class samples and primarily White children. For example, in a low risk, mostly White sample (N = 112) of two-year-old children, the pathway from parenting stress to preschool internalizing problems was partially mediated by over-involved and protective parenting (Bayer et al., 2006). In another study of 589 mostly White middle-income couples and their toddlers, Deater-Deckard and Scarr (1996) found that parental authoritarian discipline mediated the relations between parenting stress and child behavior problems, though effects were small (regression coefficients did not exceed .21), and higher levels of parenting stress were associated with lower family income and education for parents.

Still, research with ethnically diverse children shows similar results. Whittaker and colleagues (2011) tested the mediating role of maternal sensitivity between parenting stress and children's socio-emotional functioning (specifically aggressive behaviors, social competence, and problem behavior) in a sample of ethnically diverse mothers of children in Early Head Start (N=104). Using a longitudinal design and SEM framework, analyses revealed that maternal sensitivity mediated the relationship between parenting stress and children's functioning, such that higher levels of parenting stress predicted lower levels of maternal sensitivity and in turn, lower levels of children's socio-emotional skills ($\beta = .43$) (Whittaker, Jones Harden, See, Meisch, & T'Pring, 2011).

However, other studies do not find support for parenting as a mediator. For example, a study of 125 predominantly White toddlers and their mothers found that parenting stress was associated with less dyadic pleasure in a mother-child interaction, though dyadic pleasure did not mediate the association between parenting

stress and children's subsequent development. Still, parenting stress at age three did predict child negativity and maternal reported behavior problems at age five (Crnic et al., 2005). The authors posit that while perhaps dyadic pleasure did not mediate the association between parenting stress and child outcomes, another parenting behavior may have. Clearly more work is needed to better elucidate the ways in which parenting practices serve to mediate the negative effects of life stress on children, with special attention to the measurement of parenting behaviors and practices.

Taken together, the studies reviewed show support for the mediating role of parenting in the relationship between stress and child outcomes. Still, several limitations exist. First, a diversity of measurement exists in researchers attempts to capture parenting practices, which may lead to diverging findings. Second, a vast majority of the research on the relation between stress and child outcomes is based on maternal report (Crnic et al., 2005), which is problematic from both a methodological and theoretical perspective. For example, if mothers report on both parenting stress and child behavior, the discriminant validity of the measurement tools becomes crucial to ensure that each measure is clearly differentiating the two constructs. Moreover, it may be that mothers who report higher levels of stress perceive their children's behavior as more negative, or that mothers with difficult children report higher levels of stress. For example, Pett and colleagues (1994) found that mothers who experienced high stress perceived their toddler's behavior to be more deviant compared to mothers who reported lower levels of stress (Pett, Vaughn-Cole, & Wampold, 1994). Further, Qi & Kaiser (2003) noted in their review of the literature that mothers who reported higher levels of parenting stress also reported more

externalizing behaviors from their children. Finally, Williford and colleagues (2007) found that children's externalizing behavior problems, anger proneness, and emotion dysregulation predicted higher parenting stress in toddlerhood, pointing to the likely bidirectional relationship of parenting stress and child outcomes. Therefore, these findings highlight the need for diverse reporters of child outcomes and longitudinal data that takes into account both the determinants of parenting stress as well as the consequences and sheds light on the direction of effects.

The influence of economic stress on parenting behaviors. Through the integration of the family stress model and the stress buffering model, an additional pathway was added that directly connects economic stress and parenting (see Figure 1c). A voluminous body of research has demonstrated the negative effects of poverty and economic stress on parenting behaviors (for a review see Edin & Kissane, 2010). Parents who experience economic stress engage in more disrupted parenting behaviors, employing both more harsh, punitive strategies and less sensitive, warm strategies (Conger & Donnellan 2007; Conger et al., 2010).

Mothers who experience high levels of economic stress are also more likely than mothers who do not to neglect their children. In an innovative study employing three separate longitudinal datasets, Shook-Slack and colleagues (2011) used data from FFCWS, Healthy Families New York (HFNY) and the Illinois Families Study – Child Well-being (IFS) to investigate the associations between maternal reports of economic stress (e.g., having utilities cut off, cutting the size of meals, and not being able to seek medical attention when sick) and parenting neglect. Multivariate logistic regression analysis conducted separately across each data set was used to predict both

official reports of investigated neglect and self-reported neglect. Results indicated that across all three studies, economic hardships were significant predictors of future reports of child neglect, and were found to have statistically similar effect sizes across each study (though effects were not reported).

Other studies that extend the family stress model and include child outcomes find similar results. For example, one large (N = 13,877) study of families with toddlers in the United Kingdom found that maternal reported parenting practices and behaviors, namely positive relations, discipline practices, and reading activities, mediated the association between economic deprivation in infancy and children's cognitive development and behavior problems at age three (Kiernan & Huerta, 2008). Specifically, the indirect effect of economic deprivation via parenting practices (e.g., positive relations, discipline practices) represented more than 40% of the total effect of economic hardship on child internalizing and externalizing problems, while more than 50% of the total economic effect on cognitive performance was explained by parenting behaviors (mainly reading activities).

Another large study (N=1,851) of low-income families participating in the National Early Head Start Research and Evaluation Project (NEHSREP) examined the associations of a cumulative risk variable (heavily weighted towards indicators of economic hardship and stress) in infancy, maternal warmth and responsiveness and the provision of language and literacy stimulation in the home during toddlerhood (as measured by the HOME), and children's social competencies and school readiness skills (achievement, regulation, and problem behavior) at pre-K (Mistry, Benner, Biesanz, Clark, & Howes, 2010). Using SEM and a longitudinal design, researchers

found that maternal warmth and responsiveness mediated the association of economic risk in infancy and children's school readiness outcomes at pre-K, with effect sizes modest but significant (betas ranged from -0.02—0.12) (Mistry et al., 2010).

Finally, a large (N=21,255), cross-sectional study of families drawn from the Early Childhood Longitudinal Study-Kindergarten (ECLS-K) dataset demonstrated that while both family income and material hardship were related to children's cognitive skills and socio-emotional competence at age six, positive parenting (as measured by the HOME) also mediated this association, such that the negative effect of material hardship on child outcomes was less strong when children had a warm, supportive parent (Gershoff et al., 2007). Taken together, these findings suggest that economic stress compromises parents' warm, sensitive parenting, and may lead them to engage in harsher or more withdrawn interactions, which in turn negatively impacts child development.

The Stress Buffering Model

The stress buffering model suggests that stress adversely impacts parenting, but the provision of social support is hypothesized to moderate this association, such that social support attenuates the negative effect of high levels of stress on parenting (see figure 1D). Given the wide variability in the definition of social support, I first provide an overview of how scholars define social support. I then review studies that explicitly test the stress buffering model as it relates to economic and parenting stress, parenting practices, and test social support, in any form, as a moderator.

Defining social support. In the broadest sense, most scholars agree that social support refers to the process through which social relationships promote health and

well-being (Cohen et al., 2004). Social support may be resources that one perceives to be available or that are provided to them in the context of both formal support groups and informal relationships (Cohen et al., 2004). Many scholars agree that perceived support (i.e., self-report) is a better measure of support than objective support (e.g., count of network members) (Ayala et al., 2017; Zimet, Dahlem, Zimet, & Farley, 1988), in part because the perception that others will provide help when they are needed is key to the stress-buffering nature of support (Cohen et al., 2004). Still, there is a lack of consensus as to how to measure social support, made more difficult by the numerous ways support may be provided. For example, emotional support is characterized by having someone who you can talk through your problems with, share in joys and sorrows, and disclose personal feelings with. Contrastingly, instrumental support encompasses material and physical assistance (e.g., someone who would lend you money or pick up your child from childcare). Informational support includes the provision of advice and positive feedback. Many studies use a measure of social support that includes more than one type of support, making it difficult to parse out the effects of different supports. To this point, I will specify the ways in which social support was measured in each of the studies reviewed below.

Social support as a moderator of the association between economic stress and parenting. High levels of social support have been shown to be associated with more sensitive parenting in poor families (Raikes & Thompson, 2005), and many studies suggest that social support operates as a moderator of the association between economic stress and parenting practices (Barnett, 2008). That is, the negative effects of economic stress on parenting behaviors can be weakened when parents receive

social support. For example, one early study using data from the National Survey of Families and Households examined the associations among poverty, measures of social support (emotional, informational, and instrumental) and parents' self reports of punitive and unsupportive behaviors (Hashima & Amato, 1994). The sample included 1,035 ethnically diverse parents with one or more children under the age of five in the household. Using probit analyses, the authors found that for the poorest parents, those who felt they had more social support were less likely to report using punitive parenting strategies (e.g., yelling, slapping/spanking) suggesting that perceived support may play a role in buffering poor parents from the stressful conditions of poverty and lower the incidence of negative parenting behavior. A more recent study using a slightly older sample of Croatian children and their mothers (N=746) corroborated this finding, such that social support (measured as emotional support) moderated the negative effects of economic stress (satisfaction with housing conditions and perceived impact of economic hardship) on self–reported child abuse potential (measured using the Child Abuse Potential Inventory, CAPI; Milner, 1986). As such, for mothers who perceived lower levels of support, the effects of exposure to economic stress on child abuse potential were stronger (Ajdukovic, Rajter & Rezo, 2018).

Another study tested whether social support (instrumental and emotional) moderated the association between family income and positive parenting practices (e.g., communication, involvement, parenting confidence) using a sample of 290 mostly White rural families with young children at risk for internalizing and externalizing behaviors (Lee et al., 2009). Though not a direct measure of economic

stress, many studies have demonstrated a strong negative correlation between family income and economic stress (e.g., Conger & Conger, 2002; Mistry et al., 2010). Using an SEM framework and a cross sectional design, results indicated that social support moderated the relationship between low family income and self-reported parenting behaviors, such that for poor families, the presence of social support was associated with improved parenting. Taken together, these findings are consistent with the stress buffering model, such that social support was beneficial for those in need of assistance (Cohen & Wills, 1985).

However, other studies investigating the role of social support in the association between economic stress and parenting fail to find evidence for the stress buffering model. For example, McConnell and colleagues (2010) examined the moderating role of social support (emotional support) on the association between financial hardship and parenting in a large (N= 923) study of Canadian parents. Using regression and a cross sectional design, results indicated that social support did not buffer the negative effects of financial hardship on parenting. Rather, social support had a positive main effect on positive parenting practices, lending support for the main effect hypothesis, that social support is important for all parents, not just those who are more stressed (McConnell, Breitkreuz, & Savage, 2010). In another study, Lee and Lee (2016) investigated the role of material hardship and social support in parenting practices (hostile, warm, and consistent parenting) and child outcomes (social functioning) using a large sample (N = 7,969) of six and ten-year-old children. Logistic regressions revealed that while social support, measured as emotional support, was a significant predictor of all parenting and child outcomes, interaction

effects revealed the positive effects of social support were relatively smaller for children from families with material hardship. However, the study used correlation data, and causality cannot be confirmed. Still, it may be that while social support is clearly important for families experiencing economic stress, more formal, financial supports are more valuable for alleviating the negative effects of material hardships under some conditions.

Social support as a moderator of the association between parenting stress and parenting. According to the stress buffering model, social support is an effective buffer against the negative effect of parenting stress on parenting practices. Some research has found that the provision of social support in the context of parenting stress is associated with positive parenting behaviors, such as maternal warmth (McConnell et al., 2010). For example, in a study of 75 mostly White mothers and their five-year-old children, researchers found that mothers' social support (emotional) moderated the influence of parenting stress (measured as daily hassles) on observed maternal behaviors (affect, sensitivity; Crnic & Greenberg, 1990). Post hoc comparisons demonstrated that under higher levels of stress, mothers' with greater support had displayed more positive behaviors than mothers' with low support. Of note, researchers included the source of support in analyses and found that friendship and community support consistently acted to moderate mothers' experience of parenting stress on behaviors, while partner support moderated only the effect of parenting stress for mothers' affect. Such findings highlight the importance of considering *sources* of support to further clarify the moderating role of social support.

Other research has shown that social support, defined in a myriad of ways, may buffer the association between parenting stress and mothers' cognitively stimulating behavior. For example, in a study (N =153) of ethnically diverse mothers and preterm toddlers, researchers tested three types of support (informational, instrumental, and emotional) from family members as a buffer for maternal stress (Lutz et al., 2012). Mother-infant dyads were videotaped when children were two-years-old, and interactions were subsequently coded for parent and child behaviors. Support for the stress buffering model was found for only a specific type of support, such that informational support (e.g., provision of advice) functioned as a protective factor against the negative effects of parenting stress on cognitively stimulating parenting behavior. That is, informational support predicted positive play behavior for mothers under high stress but not for mothers facing lower levels of stress. Another small (N= 70) study of mostly White mothers of diverse SES background also demonstrated evidence for the stress buffering role of instrumental support specifically, such that the diversity of sources of instrumental support buffered the negative effects of maternal fatigue on parenting (measured as quality of stimulation using the HOME; Caldwell & Bradley, 1984) (Parks, Lenz, & Jenkins, 1992). That is, mothers who had more sources of support (e.g., partner, family member) were more likely to show higher levels of stimulation. Finally, other research has demonstrated that emotional support is also linked to cognitively stimulating parenting. Crnic and colleagues (1983) tested the longitudinal associations of parenting stress and social support (emotional) on early mother-infant interactive behavior in a larger (N= 105) study of primarily White mother-infant dyads (52 of which were born premature).

Results indicated that social support moderated the adverse effects of parenting stress on mothers' observed sensitivity and social-emotional growth fostering behavior.

Social support has also been shown to be a buffer against parenting stress as it relates to negative parenting behaviors. In a small (N = 85) study of mothers of young children, social support (emotional and instrumental) buffered the relationship between parenting stress and parenting behavior, such that mothers who received high levels of support were less likely to report the use of punishment, inconsistency, coldness, sensitization, and rejection oriented behavior (Rodgers, 1998). In a larger (N=1,161) longitudinal study of ethnically diverse mother-toddler dyads, Heberle and colleagues (2015) examined the longitudinal associations of parenting stress, sub-optimal parenting practices, and social support. When children were two-years-olds, mothers reported on their own parenting stress (using the PSI) and social support (instrumental and emotional). Mothers also reported on their dysfunctional interactions with their toddlers when they were two and three years-old. Using an SEM framework, results indicated that early social support buffered the relation between parenting stress and later suboptimal parenting behaviors. Taken together, these findings suggest that both emotional and instrumental support may be important for not only buffering the negative effects of parenting stress on positive parenting practices, but also more negative practices and behaviors.

In sum, there is a relatively strong body of work that supports the stress buffering model. That is, social support has been found to attenuate the negative effects of multiple types of stress on parenting across a range of studies. Still, several limitations make it difficult to clarify what type of social support is protective against

the negative effects of stress on parents. First and foremost, there is disagreement about how to measure and define social support. While most scholars agree it involves either the real or perceived support one receives, a lack of consensus on what social support is and how to measure it has led to confusion and is a likely contributor to the largely mixed findings in the literature of social support as a moderator. For example, one study conceptualized social support as the presence or absence of a stable, cohabiting partner (Brown & Lynn, 2010), while another assessed the size and composition of the social network regarding emotional support, tangible support, and informational support (Ayala-Nunes, Jimenez, Jesus, & Hidalgo, 2018). Such varied methods of capturing social support likely contribute to differing results.

Moreover, the use of cross-sectional data, as opposed to longitudinal data, makes it difficult to test moderation and prevents further investigation into causality (Manuel et al., 2012). This is a problem because it may be that stress impedes a person's ability to obtain social support; without a clear picture of directionality, it is impossible to understand the pathways by which stress and support interact to impact parenting.

In a similar vein, some scholars suggest that in some cases, social support may be a source of stress for some families, and may even have negative effects on parenting in certain circumstances. For example, social support may be a source of stress when friends or family members provide criticism even as they offer support (Raikes & Thompson, 2005). Research on multigenerational families suggests that teen mothers display more warmth towards their child when their grandmother is nonresident (Black & Nitz, 1996). That is, low-income urban teen mothers with

infants classified as having failure-to-thrive (FTT; decelerated or arrested physical growth) who lived with their grandmothers were less warm in their interactions with their children and had children with lower motor development than FTT infants of teen mothers who did not live with their grandmothers. While counterintuitive that having a grandmother in the house would lessen maternal warmth, the authors suggest that the presence of a grandmother may serve as a source of criticism as opposed to positive support. As such, the presence of negative, reinforcing influences can also lead to the proliferation of negative parenting practices (Freisthler, Holmes, & Wolf, 2014). For example, one study found that for parents who reported having a higher percentage of his or her social companionship support network living in the neighborhood, more frequent child physical abuse occurred (Freisthler et al., 2014). That is, parents who had a lot of friends in the neighborhood with whom they regularly see may share negative discipline strategies, or may reinforce negative parenting practices. Therefore, whenever possible, the role of the support, as well as how a given parent views the support, must be taken into account.

To date, few researchers have examined specific types of social support as they relate to specific stressors, and whether certain supports buffer the effects of certain stressors on parenting. This is an important gap, particularly for interventions targeting social support, as a given social support must match the stressor in order to provide an effective buffer (Cohen & Wills, 1985). For example, one study found that emotional support from a partner moderated the adverse effects of stress on mothers' well-being and interactions with her children, but emotional support from friends was more important in buffering mothers from daily hassle stress than was the emotional

support from their partner (Crnic et al., 1983). The authors suggest this could be because friends are more empathetic to the everyday experiences of parenting, or that mothers prefer that their partners offer instrumental support as opposed to emotional support. In any case, further investigation of how and why specific supports buffer specific stressors is warranted.

Moreover, little research has focused on low-income families. This is an important gap, as families living in poverty perceive lower quality social support, have smaller networks (which are mainly sex segregated and consist of predominantly family members), have been found to exchange support with fewer people, and are often less satisfied with the support they do receive (Antonucci, 2001). Furthermore, low-income families are more likely to lack the financial resources to purchase instrumental support, like child care (Hashima & Amato, 1994; McLoyd, 1998; Orthner, Jones-Sanpei, & Williamson, 2004). Research has shown that some of the most economically needy families are those with the most limited access to social support (Henly, Danziger, & Offer, 2005), with one study of low-income families showing that fewer than 50% said they routinely turn to friends or relatives in times of need (Orthner et al., 2004). Given that evidence shows that social support is associated with more sensitive parenting in low-income families (Barnett, 2008) and has been found to moderate the negative effect of stress on families at risk for child maltreatment (Li, Godinet, & Arnsberger, 2011), social support may be an important point of intervention for poor families.

Similar to the literature reviewed in previous sections, there is a lack of research on ethnically diverse families. This is an important gap because some

research shows differences by ethnic group. For example, one study found that Latino mothers perceive lower levels of support than White and Black mothers (Radey, 2015) making them more vulnerable to the effects of low social support on mental health functioning and parenting.

Additionally, many studies include families with adolescent children (Kotchick, Dorsey, & Heller, 2005; Simons, Lorenz, Conger, & Wu, 1992), but fewer include families with young children. This is an important gap, as raising an infant is both physically and emotionally demanding, and parents with young children may benefit from increased social support. Early motherhood requires intense physical recovery and transitioning to new familial roles (Sampson, Villareal, & Padilla, 2015), and having a young child can lead to social isolation (Kendall-Tackett, 2005). Therefore, the buffering effects of social support on stress may be particularly relevant for parents of young children, and further research that includes parents of young children is needed.

Future Directions and Conclusions

The literature on stress and social support has been in existence for over 30 years, and has led to important findings in the fields of parenting, child development, and child maltreatment. Increasingly, social support is conceptualized as an important area for intervention in evidence-based reforms to policy and practice. Yet there are still notable methodological and theoretical gaps in the literature that have not been adequately addressed. The review of this literature revealed three major areas that merit further attention. In this section I highlight these issues and offer suggestions to move the field forward.

Methodological concerns. Across studies, parenting stress, economic stress, and social support were all defined, and therefore measured, in a myriad of ways. Social support in particular is the most challenging construct to define, though general consensus seems to agree on three broad types: emotional support, instrumental support, and informational support. Researchers must include their interpretation and definition of such constructs, as well as how these map on to the measurement tools they choose to use, for scientific transparency and replicability. Such clarity is necessary given the broad definitions of each of the three types of support. For example, instrumental support includes both the provision of finances and the provision of childcare. While both types fall under the instrumental support umbrella, one may be more efficacious at buffering economic stress, for example, than another. That is, even within one construct of support, researchers must continue to clarify for whom and under what conditions support moderates stress. Given the myriad of ways constructs like social support are defined and measured, it is not surprising that the literature shows diverging findings.

Moreover, issues of measurement plagued many of studies reviewed. For example, direct measures of parenting are always preferred to self-report measures, which have the potential to introduce reporter bias. Moreover, attention must be paid to what constructs of parenting researchers choose to measure. Capturing both positive and negative dimensions of parenting will help better refine the field's understanding of the mediating role of parenting as described in the family stress model. Similarly, many studies included maternal reports of child outcomes, which can lead to shared variance. Whenever possible, studies of parents and parenting

should use a separate reporter for child behavior to help disentangle the associations of parenting and child outcomes.

A large proportion of the studies reviewed were cross-sectional and correlational in nature. While many of these studies showed support for the family stress model and the stress buffering model, it is impossible to discern causality. Scholars who employ the family stress model or the stress buffering model should move towards using longitudinal data, which makes it possible to test variables as mediators or moderators.

Moreover, very few studies reported effect sizes. While scholars typically report on associations between two variables, effect sizes allow researchers to be able to quantify whether that association is of practical importance. In particular, reporting effect sizes is critical for policymakers who base decisions of early childhood and family policy on scientific research.

Finally, while many studies controlled for some demographic factors like ethnicity or education, few studies included other constructs that would likely correlate with variables of interest. For example, when possible, studies of stress should also include measures of mental health as a control if it is not a variable of interest, as a vast body of literature has shown that stress and depression are often comorbid. In regard to research on social support, it is important to consider including variables that might capture the more negative aspects of social support. For example, when partner support may be a source of stress for an individual, controlling for indicators of the family environment, co-parenting relationship, or spousal relationship may help elucidate the ways in which support is helpful or not.

Investigating the specificity principle: specific stressors and specific supports. Most of the research reviewed on social support as a moderator included one measure of stress and more than one measure of support, making it difficult to parse the effects of a specific type of support on a given stressor. Moreover, very few studies addressed the importance of matching stressors to supports, despite the emphasis on such a practice in Cohen and Will's (1985) seminal work on social support. Future studies should build on existing research by including more than one stressor and more than one support. Applying Bornstein's specificity principle (2013), specific supports will alleviate specific stressors under specific conditions. Stress by support specificity models will aid in policy-making and intervention and prevention efforts that aim to better understand what works, for whom, and under what condition.

Exploring variability. Many studies reviewed included low-income and/or ethnically diverse samples. Still, a large number of studies on stress and support were excluded from this review because they did not meet the review constraints; that is low-income families with young children. There is still a glaring need for more research that includes samples outside of the range of White, middle-class mothers and their children. Existing research has demonstrated that ethnic minority families are more likely to be low-income, have higher rates of mental health problems, and perceive lower levels of support than other groups (Radey, 2015). Moreover, America's youngest children are those most likely to live in low-income or poor households (Jiang et al., 2016). Early childhood is a time of mounting stress for parents, and while a significant amount of work exists with adolescents, less so exists

for families of young children. Scholars must include such samples in studies of stress and support, as poor, ethnic minority families with young children are among the most relevant groups who could benefit from such research.

Chapter 3: Methods

Data Source

I used data from the Early Head Start Family and Child Experiences Survey (Baby FACES) 2009, a large longitudinal descriptive study designed to capture the characteristics, experiences, and outcomes of EHS children and families. Baby FACES is a national probability sample of 89 Early Head Start center- and/or home-based programs and includes two cohorts (1-year old and newborn) of children enrolled in spring 2009. It was designed to be representative of the population of EHS programs nationally. Data collection began in spring 2009 and continued annually until children reached age 3 or left the program. The Newborn Cohort includes 194 pregnant mothers and newborn children who entered EHS by 8-weeks of age. The 1-year-old Cohort includes 782 children who entered EHS at approximately age 1. The Baby FACES eligible age windows for the two cohorts of children were defined as follows: (1) Cohort 0/the Newborn Cohort included pregnant women within 2 months of their due date and newborns less than 2 months old; (2) Cohort 1/the 1-year-old Cohort was infants 10 to 15 months old.

Baby FACES used a stratified clustered sample design. A stratified approach means that important characteristics of programs and families are taken into account and used to divide the population into smaller groups (strata) before selection of the programs with the goal of ensuring that programs with these characteristics are included in the sample in proportion to their frequency in the universe of programs. A clustered design means that children are grouped within a program, and in this case either within classrooms or by home visitors. To address this stratified clustered

sample design I included strata, cluster, and weight variables available in the Baby FACES dataset. For more information on thee design and strata and cluster variables, see the user guide (Cannon, Murphy, Bloomenthal, & Vogel, 2014).

The study team oversampled larger programs to yield more children and families and used the most recent Head Start Program Information Report (PIR) data as a sampling frame, which at the time of sampling covered program year 2006–2007. Programs serving pregnant women, infants, and toddlers funded by the Migrant and Seasonal Head Start branch (Region XII) and programs funded by the American Indian/Alaska Native branch (Region XI) were not included due to data collection scheduling and cost limitations (i.e., these programs often operate on a different schedule from other programs, which creates scheduling challenges and increases the data collection costs). Programs that served fewer than 25 enrolled families, as well as programs in Alaska and Hawaii, were excluded.

Twice the number of programs needed were selected for the study in fall 2008, under the assumption that some programs would refuse to participate or would be found ineligible. Researchers then formed sequential pairs of selected programs, as sorted by explicit and implicit stratification variables (size, service approach, and location), so that adjacent programs were likely to be similar. One program within each pair was randomly selected to be the main release, and the other was available as a replacement for the released program, should one have been needed. In the case of using replacement programs, both programs would be treated as "released" into the sample for purposes of calculating weights and response rates. This method provides an uncomplicated way of replacing a nonparticipating program with a similar

program. It also virtually ensured meeting the target number of 90 participating programs while enabling staff to quantify the probability of selection.

Once project staff successfully recruited each program and determined eligibility, an on-site coordinator (OSC) was identified and deemed responsible for working with project staff on data collection logistics, including but not limited to: logistics associated with home and classroom visits; procedures for scheduling observations; obtaining informed consent, meeting local IRB requirements; and determining the best week to conduct spring data collection. Each spring, project staff requested an updated roster from each program's OSC. Once child eligibility was determined, program staff sent the OSC consent forms to mail to parents. Consent forms explained the purpose of the study, confidentiality, and voluntary participation. Mothers were given $35 for each interview.

The study team selected children who received center and/or home-based services from a probability sample of 89 Early Head Start programs (including those receiving services through partnership arrangements). All children in each of the 89 programs whose date of birth (or due date, for expectant mothers in the newborn cohort) fell within the study-defined windows were selected for the Baby FACES sample. At baseline in 2009, 89 programs across the country were recruited with a consent rate of 94%, and children who received center-based and/or home-based services from these 89 EHS programs were selected into the Baby FACES sample. From those programs, 1,217 children were selected into the Baby FACES sample in the spring of 2009. Of these children, 109 were ineligible (due to birth date or they were not actually enrolled in the program) and 132 eligible children's parents did not

give consent to participate. Therefore, across both cohorts, 976 children were recruited at baseline with a consent rate of 88.5% (Cannon et al., 2014).

Attrition. Children who exited the EHS program from which they were sampled ceased to be eligible for Baby FACES, and this was by far the main driver of attrition. As such, there is less data to draw on in the later years. The Baby FACES research team published multiple reports on attrition in the sample and how to approach analyses (Vogel et al., 2015). Overall, a majority of the missing data at age 2 and 3 is due to attrition. For example, while the 1-year-old cohort started with 782 children at wave 1, by wave 2 the sample had dropped to 602, and by wave 3 there were 469 children enrolled. Differences between those who stay in the program and early exiters can introduce bias into estimates of age 3 outcomes if uncontrolled for. Early exiters were ineligible to participate in Baby FACES and therefore no follow-up data was collected on them after their exits.

Based on baseline characteristics, early exiters have similar characteristics to children who stay in the program. Most of the differences observed between the two groups are not statistically significant (e.g., race, child gender, dual language learner status, receipt of public assistance, income to needs ratio). The few exceptions are that early exiters (42 percent) were more likely than children who stay (28 percent) to have moved in the year prior to the baseline interview. Also, more early exiters (59 percent) than children who stayed (50 percent) were born to mothers who had their first birth as a teenager. The Baby FACES research team also tested whether early exiters differed from children who stayed in terms of their overall satisfaction with their Early Head Start program. In interviews conducted upon program exit or when

children who stayed in the program were 3.5 years old, parents were asked to rate their satisfaction with the program on a 4-point scale (with 1 = very dissatisfied and 4 = very satisfied). A statistically-significant difference emerged between the mean satisfaction rating of early exiters (3.72) compared to the mean rating of those who stayed (3.85). Appendix D of the technical report provides an extensive discussion of the baseline differences and similarities between the characteristics of toddlers who stay as compared with early exiters (Vogel et al., 2015).

Procedures

Baby FACES collected data from pregnant mothers (for the newborn cohort), and at 1, 2 and 3 years of age through telephone interviews with children's primary caregivers (mostly mothers), videotaped observations of mother-child interactions, home observations (including the Home Visit Rating Scale-Adapted; HOVRS-A, Roggman et al., 2010), staff-child reports, home-visitor/teacher interviews, and classroom quality observations using the Infant/Toddler Environment Rating Scale-Revised (ITERS-R; Harms, Cryer, & Clifford, 2003). The present study used data from the baseline (age 1) mother interview, videotaped mother-child interactions at 2 years of age, and mother reports at 3 years of age. More specifically, this study used maternal reported parenting stress, economic stress, and social support at age 1; observed maternal intrusiveness and sensitivity at age 2; and maternal reported child social competence and behavior problems at age 3. See table 1 for more information on the measures.

Interviewing mothers. Parent interviews were collected annually in the spring to obtain information on children's family and home environment. Participants

were paid $35 for completing the interview, which took approximately 45 minutes. All interviews were programmed and administered using computer-assisted telephone interviewing (CATI), allowing the individual path of each interview to be determined based on previous answers. When necessary, the interview was conducted in Spanish by trained bilingual Spanish/English interviewers. Research staff conducted ongoing monitoring of 10% of the interviews throughout the telephone data collection period. The parent interview response rate for mothers of children enrolled in the study was 78% at baseline and 76% at the final wave (age 3; Vogel et al., 2015).

Mother-child observations. Mother child observations took place at home when each child was 2 and 3 years of age. During the home visit, trained field staff administered an eight-minute semi-structured play-based task to mothers and children (Two-Bag Task). The purpose of this task was to assess parent and child behaviors during play. Field staff asked each parent-child dyad to sit on the floor and progress through two bags; the first bag contained a book and the second bag contained a set of toy dishes and play food. Parents were given 8 minutes to play however they liked, but were asked to start with bag 1 before moving on the bag number 2.

An expert coder trained a team of coders to review and code the videotaped interactions. The certification criterion required that coders achieve 92 percent agreement (exact or within one point) with the ratings assigned by the expert coder across the 12 scales. Following training and certification, team leaders worked with the coding team to establish and maintain inter-rater reliability throughout the coding period. Inter-rater reliabilities between the team leaders and coding team members were established on the 12 seven-point scales to a criterion of 80 percent, allowing for

a one-point difference in scores. Thereafter, the team conducted weekly inter-rater reliability checks on three to five randomly selected videos.

Analytic Sample

This study uses data from the 1-year-old cohort (n=782) because social support data were not collected from the newborn cohort (n=194) at age 1. Of the 782, by age two 602 children remained in the study, and by age 3 there were 469. Instead of constricting the sample to only children who have age 3 BITSEA data (n=469), I used the full sample and addressed missingness with robust full information maximum likelihood (FIML), which uses all available data in estimating overall model fit and individual parameters. There were 47 children who did not have data on any study variables, and 141 children who did not have data on either all independent (n = 129) or dependent (n = 2) variables. Eight children were missing a value for the weight, and were thus not included in analyses. Therefore, the final sample used in the SEM analyses was 586 children. Tables 2 and 3 display basic descriptive statistics over all three time points based on key demographic variables as well as variables of interest.

There were 79 children who were still in the study at age 3 but who did not have age 3 BITSEA data. To test if these children were different from children at age 3 who did have BITSEA data (n = 390) I conducted a bias analysis by comparing both groups on key study variables and demographic information. There were no significant differences between the two samples. Thus, my findings generalize to children enrolled in EHS in 2009 (as 1 year-olds) who continued to be enrolled at each data collection point (age 1, 2 and 3).

Measures

Baby FACES includes a battery of parent surveys, videotaped mother-child interactions, staff (teacher or home visitor) reports, and direct child assessments. Table 1 includes a list of all study measures, the method of assessment (i.e., direct, observed, reported), and the place in the conceptual model (i.e., dependent variable, moderating variable, independent variable, control variable). Figure 2 shows how these variables are theoretically linked to one another.

Child social competence and behavior problems. When children were 3 years-old, mothers reported on children's socio-emotional competencies and behavior problems using the 42-item Brief Infant-toddler Social Emotional Assessment (BITSEA) (Briggs-Gowan & Carter, 2006). The BITSEA is designed to detect delays in the acquisition of social-emotional competencies and the presence of social-emotional and behavior problems in children 12-36 months old. Mothers reported on dimensions of both social-emotional competencies (e.g., hugs and feeds doll) and problem behaviors (e.g., avoids physical contact). Higher scores on the problem behavior scale indicate more problems, while higher scores on the competence scale indicate higher competence. The BITSEA has been validated with diverse samples, has shown high internal consistency (with a median reliability coefficient of .70), and high concurrent validity with other standardized assessments of language ability (Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2004). For this study, the Cronbach's alpha for parent reported problem behavior at age 3 was .88; for social competence it was .74 (Vogel et al., 2015). This measure is proprietary and therefore is not included in the appendices.

Economic stress. Economic stress (see appendix A) was measured using a compilation of ten questions. Parents were asked questions about food insecurity and ability to pay bills within the last year. Response options were yes or no, and items were summed; as such, scores ranged from 0 to 10. These questions overlapped greatly with other validated measure of economic stress/strain (Conger et al., 1994; Wadsworth, Raviv, Compas, & Connor-Smith, 2005).

Specifically, the five food insecurity items were drawn from an 18-item U.S. Department of Agriculture (USDA) module on anxieties over food insecurity (Vogel et al., 2015). For example, mothers were asked to report on whether or not they were worried food would run out in the past 12 months. All five items were highly correlated and demonstrated reliable internal consistency. According to the Baby FACES technical report, Cronbach's alpha for the five-item scale was 0.88, and removing any item yielded a lower alpha value. Exploratory and principal components factor analysis supported a one-factor model (see Vogel et al., 2015 for more information).

The items assessing financial security (e.g., ability to pay bills) came from the Adult Well-Being Topical Module used by the Survey of Income and Program Participation (SIPP) (Vogel et al., 2015). According to the Baby FACES technical report, Cronbach's alpha for the five items was 0.67.

Parenting stress. Parenting stress was assessed using the Parenting Stress Index- Short Form (PSI-SF), which measures the degree of stress in parent-child relationships (Abidin, 1995). The scale has three subscales: difficult child; parental distress; and parent-child dysfunction. Baby FACES included the parental distress

and parent-child dysfunctional interaction subscales. The Parental Distress subscale included five items and measures the level of distress the parent is feeling in his or her role as a parent (α = .83). Example items included "I feel trapped by my responsibilities as a parent," and "I don't enjoy things I used to do." The Parent-Child Dysfunctional Interaction subscale included six items and measures a parent's perception that his or her child does not meet expectations and interactions with the child do not reinforce the parent (α = .85). Example items included "my child doesn't seem to learn as much as most children," and "sometimes my child does things that bother me just to be mean." Parents rated each item on a five-point scale from "strongly disagree" to "strongly agree." Higher scores indicated higher levels of distress and dysfunction.

Previous research with mothers of very young children, as well as with low-income families and Hispanic and Spanish speaking populations, has shown psychometric support for the PSI-SF (Barroso, Hungerford, Garcia, Graziano, & Bagner, 2016). Both subscales have high internal reliability, with a median coefficient of .85 (Whiteside-Mansell et al., 2007). The subscales were summed such that scores could range from 11 to 55, with higher scores indicating higher levels of parenting stress. This measure is proprietary and therefore is not included in the appendices.

Observed sensitivity and intrusiveness. Maternal sensitivity and intrusiveness were coded from videotaped mother-child interactions at child age 2. Interactions were coded using the Parent-Child Interaction Rating Scales for the Two-Bag Assessment – Parent Scales (Mathematica Policy Research, 2010) and rated on a scale from 1 (low incidence of behavior) to 7 (high incidence of behavior). The Two-

Bag Task is a modified version of the Three-Bag Task from the Early Head Start Research and Evaluation Project (EHSREP) (Love et al., 2005) and has been shown to have good reliability (α = .70). The scales measure both the prevalence and intensity of observed behaviors. Ratings on the scale are anchored by a brief description of the behaviors that warrant a specific score. Sensitivity was conceptualized as the extent to which the parent acknowledges the child's perspective, accurately perceives the child's signals, and promptly and appropriately responds to these signals. Intrusiveness was conceptualized as over-involvement and over-control. Mothers' scores for each indicator were entered in analyses.

Social support. Social support (see appendix B) was measured using 13 items that asked parents how often there is someone to turn to for help with different tasks. Response options were (1) not at all, (2) sometimes, and (3) all or most of the time. Seven items pertained to instrumental support (e.g., someone to help with childcare; someone to help with meals) and six items pertained to emotional support (e.g., someone you can count on for comfort, someone to have fun with). Mothers' scores for each type of support were averaged such that each other had a mean emotional support score and instrumental support score that were subsequently used in the analyses. These questions were developed specifically for Baby FACES and are very similar to other measures of instrumental and social support (e.g., Marshall's *Emotional and Instrumental Support Scales*; 1989), which have shown adequate internal consistency with low-income and diverse samples (α = .91) (Deater-Deckard & Scarr, 1996). The Cronbach's alpha for the 13 items was 0.93.

Control variables. To isolate the effects of study variables on children's social competence and behavior problems, I controlled for several variables related to children's social skills. Demographic controls included mothers' highest level of education, household income, and family structure, all of which have been shown to be related to children socio-emotional functioning (Janus & Duku, 2007; Yeung et al., 2002).

I also controlled for maternal depression and program type at age one. The Center for Epidemiologic Studies Depression Scale Short Form (CESD-SF), was used to measure symptoms of depression or psychological distress. The short form consists of 12 items (Ross, Mirowsky, & Huber, 1983). Participants were asked to rate how often each of the items (e.g., poor appetite, restless sleep, loneliness, sadness) applied to them in the past week on a 4-point scale from "rarely or never" (0) to "most or all of the time" (3). I controlled for program type because some literature suggests that maternal sensitivity is related to child outcomes differentially based on program type receipt (Groeneveld, Vermeer, van IJzendoorn, & Linting, 2010).

Finally, I controlled for variables based on the technical reports published by Mathematica. Per the technical reports Mathematica published regarding Baby FACES (Vogel et al., 2015), much of the missing data at later waves is due to early exiters. Differences between those who stay in the program and early exiters can introduce bias into estimates of age 3 outcomes unless I control for factors that make families exit early. The technical report conducted analyses comparing early exiters to program graduates. In summary, most exits took place between ages 1 and 2, and overall early exiters have similar characteristics to children who stay in the program

(most observed differences were not statistically significant), with the following two exceptions; early exiters were more likely to have reported moving in the year prior to the baseline (age 1) interview, and were also more likely to be born to mothers who had their first birth as a teenager. Therefore, I controlled for teen motherhood and a reported household move in the previous year at baseline (age 1).

Analytic Plan

To test the models (see Figure 3, 4 and 5) I conducted *measured variable path analysis (MVPA)*. *MVPA* is a type of structural equation modeling (SEM) that allows for the testing of theoretical causal structures among measured variables. Because I employed a longitudinal design, path analysis allowed me to assess the theoretical causality of the longitudinal associations between economic stress, parenting stress, and social support at age 1, maternal sensitivity and intrusiveness at age 2, and child social competence and behavior problems at age 3. While similar to multiple regression analysis, path analysis places emphasis on causality and allows for the evaluation of any path or combination of paths to the overall fit of the structural model, as well as helps to identify any significant indirect paths. Path analysis is preferred to regression when there are multiple mediating variables and when there is a sufficiently large sample size. Moreover, path analysis allows for an overall test of model fit and the decomposition of the correlation between the independent and dependent variables. As such, path analysis is better suited to these research questions given the multiple mediators and underlying theoretical basis for the model.

To accommodate the stratified clustered sample design used in Baby FACES, I included both a variable that accounted for the program sampling stratum and a

program ID variable used for clustering. I also included a weight variable that was positive for children deemed eligible and had parental consent at baseline (age 1). This weight adjusted for the probability of being selected into the cohort 1 sample. These internal design-based corrections were included to ensure that variance estimates and standard errors were estimated appropriately.

To address research question 1, whether the association between economic stress and children's social skills is mediated by maternal parenting stress and the quality of the mother-child relationship, I first compared two measured variable path models. I compared the model in Figure 3 with and without a direct path (not in the figure) from economic stress to children's social competence and problem behaviors. I assessed which model has better fit by comparing the models across several fit indices. Specifically, I used the chi-square test of overall model fit as well as three indicators of model fit - the Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Residual (SRMR), and the Comparative Fit Index (CFI) as recommended by Hu and Bentler (1999). Though cut-off values for adequate model fit statistics vary across authors, conservative estimates state that values <.06 for the RMSEA, <.08 for the SRMR, and >.95 for the CFI represent a close fitting model (Hu & Bentler, 1999). I then tested the individual paths from economic stress to parenting stress, parenting stress to both indicators of parenting (maternal sensitivity and maternal intrusiveness), and both indicators of parenting to children's social competence and problem behaviors. In essence, this test confirmed the full meditational pathways proposed in the family stress model.

To address research question 2 (Figure 4), that is, whether instrumental and emotional support moderate the associations between *economic stress* and parenting quality, I first mean-centered economic stress, instrumental support and emotional support by subtracting each variable's mean from the raw score to create variables with a mean of 0. I then created interaction terms for instrumental support and economic stress and emotional support and economic stress by calculating the product between each support and economic stress. Finally, I entered these terms as predictors of maternal intrusiveness and sensitivity along with economic stress and the appropriate support variable to test if each type of support attenuated the relationship between economic stress and parenting.

To address research question 3 (Figure 5), that is, whether instrumental and emotional support moderate the associations between *parenting stress* and parenting quality, I also mean-centered parenting stress and created interaction terms for instrumental support and parenting stress and emotional support and parenting stress. I then entered these terms as predictors of maternal intrusiveness and sensitivity along with parenting stress and the appropriate support variable to test if each type of support attenuated the relationship between parenting stress and parenting.

How does path analysis work? Path analysis provides estimates of the magnitude and significance of hypothesized causal pathways between sets of variables by comparing the *sample* covariance matrix to the estimated *population* covariance matrix based on a specific hypothesized model. The difference between the sample and population covariance matrices gives an indication of model fit. If the model's data fit is good based on fit indices, it suggests that the sample and

population covariance matrices are very similar and the model fits the data well (Hu & Bentler, 1999).

To test model fit, I used the comparative fit index (CFI), the root mean squared error of approximation (RMSEA), and the standardized root mean square of the residual (SRMR) as indicated by Hu & Bentler (1999). The CFI is an incremental index of fit that compares the hypothesized model to a null model (one in which there are no causal paths between variables). The RMSEA is a parsimonious index of fit that determines how well the hypothesized model fits the data while taking into account the degree of parsimony of the model. Thus, if the model fits well compared to a null model, which assumes zero correlation between all variables (based on the CFI), but there are multiple variables in the model that were not significant, the RMSEA reflects the fact that the model is unnecessarily complex. As models get more complex, RMSEA values get worse. The SRMR is an absolute fit index, and defined as the standardized difference between the observed and predicted correlation. Given that it is an absolute fit index, a value of 0 indicates a perfect fit. The SRMR has no penalty for model complexity (unlike the RMSEA).

Missing Data. The models were estimated using FIML and robust *SE*s in Mplus version 8.2 (Muthén & Muthén, 2018). In FIML the missing data is handled within the analysis model. The model is estimated by a full information maximum likelihood method that uses all available information to estimate the model. In full information maximum likelihood the population parameters are estimated that would most likely produce the estimates from the sample data that is analyzed. Instead of deleting or imputing missing data, FIML adjusts for missing data on all variables by

quantifying the relative probability of a participant's vector of values given a particular model-implied covariance matrix. That is, FIML estimates a likelihood function for each individual based on the variables that are present so that all the available data are used. The goal of the estimation is to identify the population parameter values that are most probable given the sample covariance matrix (Enders, 2013). I adjusted standard errors using bootstrapping to ensure the standard errors, and therefore significance tests, were not biased.

Preliminary analysis. Before running analyses, I ran descriptive analyses on all study variables. This process revealed that some variables of interest were skewed. Specifically, both parenting and economic stress were positively skewed, while both emotional and instrumental support were negatively skewed. That is, mothers tended to report lower levels of stress and higher levels of support. Maternal intrusiveness and sensitivity were normally distributed. Mother reported child social competence was slightly negatively skewed while mother reported problem behavior was slightly positively skewed. In regard to the control variables, maternal depression was positively skewed, while household income, maternal education, teen mother, and a move in the previous year (all categorical variables) had moderate variability. There was adequate variability for all other categorical control variables (program type, family structure).

Maximum likelihood estimation rests on the assumption of multivariate normality. Still, when this assumption is violated, the parameter estimates are typically still quite good though the chi-square based fit indices and standard errors can become compromised (Finney & DiStefano, 2006). Satorra & Bentler (1994)

developed corrections for the maximum likelihood model chi-square statistics and the standard errors to adjust for non-normal data, which I used in this study to address multivariate non-normality. The Satorra-Bentler scaled (mean-adjusted) chi-square requires that the usual normal-theory chi-square statistic is divided by a scaling correction to better approximate chi-square under the condition of non-normality.

Analysis for research question 1: Is the association between economic stress and children's social skills mediated by maternal parenting stress and the quality of the mother-child relationship? (see Figure 3)

H1a: Economic stress during infancy (at age 1) will be associated with more behavior problems in early childhood (age 3) *because* it will increase parenting stress and maternal intrusiveness and decrease maternal sensitivity (mediators).

I assessed this hypothesis by testing the indirect path from economic stress to children's behavior problems through parenting stress and maternal sensitivity and intrusiveness. By multiplying the path from economic stress to the mediators and the path from the mediators to child problem behavior, Mplus produced an estimate of the total and specific indirect paths through the mediators. I then tested the statistical significance of these indirect paths using bootstrapping. Bootstrapping, a resampling method that involves repeatedly randomly sampling observations with replacement from the data, provides an approximation of the sampling distribution of the indirect effect. Bootstrapping is commonly used to assess indirect effects (Preacher & Hayes, 2008).

H1b: Economic stress during infancy (age 1) will be associated with less social competence in early childhood (age 3) *because* it will increase parenting stress and maternal intrusiveness and decrease maternal sensitivity (mediators).

I assessed this hypothesis by testing the indirect path from economic stress to children's social competence through parenting stress, and maternal sensitivity and intrusiveness. By multiplying the paths from economic stress to the mediators and the path from the mediators to child social competence, Mplus produced an estimate of the indirect path through the mediators, the statistical significance of which was assessed using bootstrapping.

Analysis for research question 2: Do instrumental and emotional support moderate the associations between *economic stress* and parenting quality? (see Figure 4)

H2a: The negative association between economic stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *instrumental support* than for mothers with more instrumental support.

H2b: The negative association between economic stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *emotional support* than for mothers with more emotional support.

H2c: The positive association between economic stress during infancy (age 1) and intrusiveness (age 2) will be stronger for mothers with less *instrumental support* than for mothers with more instrumental support.

H2d: The positive association between economic stress during infancy (age 1) and maternal intrusiveness (age 2) will be stronger for mothers with less *emotional support* than for mothers with more emotional support.

I tested this hypothesis with interaction terms that evaluated whether social support changes how mothers respond (sensitivity and intrusiveness) to economic stress (see Figure 4). Economic stress was expected to matter *more* for mothers with low social support, but the overall model hypothesized that economic stress would *reduce* maternal sensitivity and increase maternal intrusiveness. Thus, social support was hypothesized to attenuate, or decrease, the hypothesized association between economic stress and maternal sensitivity and intrusiveness.

Analysis for research question 3: Do instrumental and emotional support moderate the association between *parenting stress* and parenting quality? (see Figure 5)

H3a: The negative association between parenting stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *instrumental* support than for mothers with more instrumental support.

H3b: The negative association between parenting stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *emotional* support than for mothers with more emotional support.

H3c: The positive association between parenting stress during infancy (age 1) and maternal intrusiveness (age 2) will be stronger for mothers with less *instrumental* support than for mothers with more instrumental support.

H3d: The positive association between parenting stress during infancy (age 1) and maternal intrusiveness (age 2) will be stronger for mothers with less *emotional* support than for mothers with more emotional support.

I tested this hypothesis with interaction terms that evaluated whether social support changes how mothers respond (sensitivity and intrusiveness) to parenting stress (see Figure 5). Parenting stress was expected to matter *more* for mothers with low social support, but the overall model hypothesizes that parenting stress will *reduce* maternal sensitivity and increase maternal intrusiveness. Thus, social support was hypothesized to attenuate, or decrease, the hypothesized association between parenting stress and maternal sensitivity and intrusiveness.

Chapter 4: Results

I organized this chapter in the following way: (1) missing data, (2) descriptive statistics, (3) preliminary analysis, and (4) path analysis.

Missing Data

There was an average of 23% missing data on all study variables, ranging from 8% on demographic variables such as teen mother status to 50% on maternal reported child social competence and behavior problems. The percent of missing data on study variables of interest is as follows: economic stress 17%, parenting stress 17%, maternal sensitivity 35%, maternal intrusiveness 34%, child behavior problems 50%, child social competence 50%, instrumental support 17%, and emotional support 16%.

The most amount of missing data was on child social skills at age 3, and over 80% of the missing data on these variables is due to attrition. The missingness on maternal sensitivity and intrusiveness is also due to attrition; that is, 50% of all missing video data was due to attrition (186 out of 276). This level of missingness can be handled successfully with FIML as long as data are missing at random (e.g., Graham, 2009).

Descriptive Statistics

I ran descriptive analysis on the sample and on all study variables when the children were 1, 2, and 3 years of age. These descriptive statistics are representative of all mothers and children who had data at each time point. Table 2 shows the descriptive statistics of the sample, and Table 3 shows the descriptive statistics of the variables of interest.

Mothers reported on demographic (age, education, income) information on themselves and their partners. When children were 1 year old, mothers were on average 23 years old (M = 22.9) and birth fathers were on average 26 years old *(M* = 25.71), respectively. The majority of mothers and fathers had at least a high school degree. Almost half of the sample of mothers (42%) and fathers (45%) had less than a high school education. More than a third of mothers (31%) and fathers (38%) had a high school degree, while less than a quarter of mothers (23%) and roughly one eight of fathers (13%) had attended at least some college.

Less than half of the sample of mothers were White (40%), more than one third were Latino (36%), and less than a quarter were Black (19%). Almost half (49% at time 1) of all children lived with their biological mother and father. One fourth (25%) of one year-old children lived in households with an annual household income of less than $10,000; more than one third lived in households with an income between $10,000 and $20,000 (37%), and less than half (38%) lived in households that made more than $20,000 annually. The majority (71%) of mothers in the sample received some type of public assistance (e.g., TANF, WIC, food stamps, SSI). Children in this study were roughly evenly split between home (50%) and center-based care (45%), with less that 5% in a combined program.

How supported are mothers? Overall, mothers reported high levels of instrumental and emotional social support at time 1, though low levels of engagement in community groups (e.g., religious services, play groups, etc.) with only 20% engaging in any type of community group (including EHS parent groups). Even though mothers reported high levels of social support, the majority of mothers (70%)

at time 1 reported that having more emotional support was a goal for their future. When asked again at time 2 and 3, 78% of mothers reported having better social support was a goal for their future. Regarding the support mothers received from EHS staff, overall mothers reported high levels of satisfaction with their home visitor/center-based teacher. They also reported above average levels of satisfaction with the instrumental support EHS provided (e.g., getting education/job training, obtaining housing, arranging childcare, getting utilities, etc.). More information on mothers' support networks is available from the Baby FACES technical appendices (Vogel et al., 2015).

Bivariate correlations. Table 4 shows the bivariate correlations among all study variables. Economic stress was significantly and positively correlated with parenting stress ($r = .231$=, $p < .01$) and significantly and negatively correlated with both instrumental and emotional support ($r = -.177$ and $r = -.257$, respectively, $p < .01$). Parenting stress was significantly and negatively correlated with both instrumental and emotional support ($r = -.166$ and $r = -.230$, respectively, $p < .01$). Parenting stress was also significantly and negatively associated with observed maternal sensitivity at age 2 ($r = -.226$, $p < .01$) and child social competence at age 3 ($r = -.176$, $p < .01$) and significantly and positively associated with observed maternal intrusiveness at age 2 ($r = .171$, $p < .01$) and child behavior problem at age 3 ($r = .197$, $p < .01$). Observed maternal sensitivity at age 2 was positively associated with children's social competence at age 3 ($r = .263$, $p < .01$) and negatively associated with children's problem behavior at age 3 ($r = -.207$, $p < .01$). Observed maternal intrusiveness was negatively associated with children's social competence at age 3 (*r*

=-.159, $p < .01$) and significantly and positively associated with child problem behavior at age 3 ($r = .127$, $p < .05$).

Preliminary Analysis

To address the first research question, I first compared two models: the first model hypothesized only indirect associations between economic stress and children's social competence and problem behaviors through reports of parenting stress and observed maternal sensitivity and intrusiveness, and the second model hypothesized both direct paths from economic stress to children's behaviors and indirect paths through maternal reported parenting stress and observed maternal sensitivity and intrusiveness. Comparing these models statistically before I ran path analysis allowed me to determine whether the first model (full mediation) fits the data better than the second model (partial mediation including a direct path). I compared the models by examining the difference between the χ^2 (measure of fit of the model) using the Satorra-Bentler scaled chi-square difference test.

The results comparing the models are not shown (they are available upon request). The first path model (full mediation) fits the data well[2]: χ^2 (6) = 11.171, p = .08, RMSEA = .038 (90% CI = .00 - .073), CFI = .989, SRMR = .024. The data also fit the second model (mediation with direct paths) well: χ^2 (4) = 7.993, p = .09, RMSEA = .041 (90% CI = .00 - .083), CFI = .992, SRMR = .021. The difference between the χ^2 of the models is 2.80, which is not statistically significant, suggesting that either model fits the data well. However, in the second model, the direct path does not significantly explain variance in children's social competence or problem behaviors. This supports the family stress model derived hypothesis that the

association between economic stress and children's social competence and behavior problems is indirect. Conventionally, the more parsimonious model, that is the model that can explain the most with a few predictors, is preferred, in this case the indirect model (Marsh et al., 2009).

Path Analysis

I ran three path models to test my hypotheses. Model 1 assessed the hypothesis that parenting stress and observed sensitivity and intrusiveness mediate the association between economic stress and child outcomes (mediation). Model 2 assessed the hypothesis that instrumental and emotional supports moderate the association between economic stress and observed sensitivity and intrusiveness (moderation). Model 3 assessed the hypothesis that instrumental and emotional support moderate the association between parenting stress and observed sensitivity and intrusiveness (moderation).

Model 1 included the following set of variables: (1) maternal report of economic stress (age 1); (2) maternal report of parenting stress (age 1); (3) observed maternal sensitivity (age 2); (4) observed maternal intrusiveness (age 2); (5) maternal report of child social competence (age 3); (6) maternal report of child behavior problems (age 3); and, (7) control variables at age 1 (see Figure 3, Table 1). The control variables (maternal education, household income, family structure, teen mother, program type, maternal depression, and move in the past year) and economic stress were modeled as exogenous variables and the set of mediators (parenting stress, maternal sensitivity an intrusiveness) and the dependent variables (child social competence and behavior problems) were modeled as endogenous.

Model 2 (Figure 4) included economic stress, observed maternal intrusiveness and sensitivity, all control variables, and instrumental and emotional support. Model 3 (Figure 5) included parenting stress, observed maternal intrusiveness and sensitivity, all control variables, and instrumental and emotional support. The set of control variables were modeled as exogenous and the moderators and dependent variables (maternal intrusiveness and sensitivity) were modeled as endogenous.

Testing mediation. Economic stress was significantly and positively associated with parenting stress ($\beta = .18$, $p < .000$), which, in turn, was significantly negatively associated with maternal sensitivity ($\beta = -0.19$, $p < .001$) and significantly positively associated with maternal intrusiveness ($\beta = .18$, $p < .001$). Maternal sensitivity was significantly and positively associated with social competence ($\beta = .29$, $p < .05$) and significantly and negatively associated with behavior problems ($\beta = -.29$, $p < .001$). Maternal intrusiveness was not significantly associated with either social competence or behavior problems. The standardized paths are shown in Figure 6.

To assess the significance for the indirect effects I ran the analysis using bootstrapping (n = 5000) and created a confidence interval for the indirect effect. For behavior problems, the total indirect effect from economic stress to behavior problems was significant ($\beta = .009$ $p = .01$, 99% CI = .003, .079). The specific indirect path through maternal sensitivity was significant ($\beta = .010$, $p < .01$, 99% CI = .001, .031), but the specific indirect path through maternal intrusiveness was not.

For social competence, the total indirect effect from economic stress to social competence was significant ($\beta = -.008$, $p = .01$, 99% CI = -.026,-.001). The specific

indirect path through maternal sensitivity was significant (β = -.01, $p < .01$, 99% CI = -.032, -.001), but the specific indirect path through maternal intrusiveness was not.

Testing moderation. To test the second and third research questions I ran moderation analyses with economic and parenting stress, instrumental and emotional support, and maternal sensitivity and intrusiveness. All control variables described above were used in the analysis.

To test hypothesis 2a,that the negative association between economic stress during infancy (age 1) and maternal sensitivity (age 2) will be stronger for mothers with less *instrumental* support than for mothers with more instrumental support, I created an interaction term between economic stress and instrumental support using the procedures outlined in Chapter 3.

Economic stress, instrumental support, and the interaction term (economic stress x instrumental support) were then entered as predictors of observed sensitivity. Economic stress at age 1 was not significantly associated with observed maternal sensitivity at age 2 (β = .029, $p = .538$) and instrumental support did not significantly moderate the relationship (β = .04, $p = .456$).

To test hypothesis 2b, that the negative association between economic stress and maternal sensitivity will be stronger for mothers with less *emotional support* than for mothers with more emotional support, I entered economic stress, emotional support, and the interaction term (economic stress x emotional support) as predictors of observed sensitivity. As noted above, economic stress was not significantly related to observed sensitivity, and emotional support did not significantly moderate this relationship (β = .017, $p = .762$).

To test hypothesis 2c, that the positive association between economic stress and intrusiveness will be stronger for mothers with less *instrumental support* than for mothers with more instrumental support, I entered economic stress, instrumental support, and the interaction term (economic stress x instrumental support) as predictors of observed intrusiveness. Economic stress at age 1 was not significantly associated with observed maternal intrusiveness ($\beta = .065$, $p = .252$) at age 2, and instrumental support did not significantly moderate the relationship ($\beta = -.040$, $p = .428$). That is, the presence of instrumental support did not attenuate the strength of the relationship.

To test hypothesis 2d, that the positive association between economic stress and intrusiveness will be stronger for mothers with less *emotional support* than for mothers with more emotional support, I entered economic stress, emotional support, and the interaction term (economic stress x emotional support) as predictors of observed intrusiveness. Again, economic stress was not significantly related to observed intrusiveness and emotional support did not moderate this relationship ($\beta = .043$, $p = .408$).

Research question 3 also had four hypotheses; to test hypothesis 3a, that the negative association between parenting stress during infancy and observed maternal sensitivity will be stronger for mothers with less *instrumental* support than for mothers with more instrumental support, I created an interaction term between parenting stress and instrumental support using the procedures outlined in Chapter 3. Parenting stress, instrumental support, and the interaction term (parenting stress x instrumental support) were then entered as predictors of observed sensitivity. Had

there been a relationship between economic stress and maternal sensitivity and intrusiveness, economic stress would have also been entered as a control variable to parse out any variance in parenting behaviors attributable to economic stress. Parenting stress at age 1 was significantly and negatively associated with observed maternal sensitivity (β = -.171, p = .001), however, instrumental support did not significantly moderate this relationship (β = .004, p = .939).

To test hypothesis 3b, that the negative association between parenting stress and maternal sensitivity will be stronger for mothers with less *emotional* support than for mothers with more emotional support, I created an interaction term between parenting stress and emotional support. Parenting stress, emotional support, and the interaction term (parenting stress x emotional support) were then entered as predictors of observed sensitivity As noted above, parenting stress was significantly related to observed sensitivity but emotional support did not significantly moderate this relationship (β = .075, p = .141).

To test hypothesis 3c, that the positive association between parenting stress and intrusiveness will be stronger for mothers with less *instrumental support* than for mothers with more instrumental support, I entered parenting stress, instrumental support, and the interaction term (parenting stress x instrumental support) as predictors of observed intrusiveness. Parenting stress was significantly and positively associated with intrusiveness (β = .168, p = .001) at age 2, but instrumental support did not significantly moderate this relationship (β = -.020, p = .655).

To test hypothesis 3d, that the positive association between parenting stress and intrusiveness will be stronger for mothers with less *emotional support* than for

mothers with more emotional support, I entered parenting stress, emotional support, and the interaction term (parenting stress x emotional support) as predictors of observed intrusiveness. Again, while parenting stress was significantly related to observed intrusiveness, emotional support did not significantly moderate this relationship ($\beta = -.030$, $p = .335$).

Chapter 5: Discussion

Economic stress is one of the most important predictors of children's maladjustment because it undermines parenting, which is critical for children's wellbeing. An extensive literature has shown that parenting stress in the early years is associated with children's maladjustment (Deater-Deckard, 2005). What is less clear are the mechanisms by which this occurs as well as the role that contextual factors such as social support play in mitigating the negative effects of stress on parenting. Guided by the family stress model, I used a longitudinal design to understand the pathways by which economic stress is linked to parenting stress, parenting, and child social development. A second goal of this study was to test the stress buffering model and examine whether the negative association between economic stress and observed measures of parenting was weakened by instrumental and emotional support. Overall, I found support for the family stress model that economic stress has a long-term negative impact on children's social skills because it increases parenting stress and reduces maternal sensitivity. I found no evidence that intrusiveness was another path through which parenting stress impacted children, even though some studies support the hypothesis that over-involved parenting mediates the association between maternal stress and children's social competencies (e.g., Bayer et al., 2006). I did not find support for the stress buffering model: social support did not attenuate the associations between stressors and indicators of parenting quality.

A Test of the Family Stress Model

The first goal of this study was to test whether the association between economic stress and children's social skills were mediated by parenting stress,

maternal sensitivity and maternal intrusiveness. I found that economic stress when children were 1 was positively associated with parenting stress also when children were 1, which was, in turn, negatively associated with maternal sensitivity when children were 2. Maternal sensitivity was negatively associated with behavior problems and positively associated with social competence when children were 3 years old. This is in line with previous research that demonstrates the indirect associations of economic stress to children's social skills through mechanisms like parenting stress and parenting (Neppl et al., 2016; Yeung et al., 2002).

Unlike past studies that typically use maternal depression to test the family stress model, this study used parenting stress (PSI; Abidin, 1990), which assesses not only maternal distress but also the quality of the parent-child relationship. Importantly, higher levels of parenting stress was associated with both less sensitivity and more intrusiveness and indirectly associated with behavior problems and social competence even after controlling for maternal depressive symptomatology. This is in line with other studies that show parenting stress is associated both directly and indirectly via maternal sensitivity with children's social skills (Whittaker et al., 2010) and highlights the importance of targeting parenting stress in intervention work. Still, the small indirect effect sizes, though significant, suggest that things other than economic stress also contribute to children's socio-emotional development. For example, some variables known to be associated with maternal functioning and child outcomes like maternal experiences of trauma, partner relationship quality and neighborhood violence were not assessed and are rarely collected in large, longitudinal surveys. Nevertheless, such variables should be included when possible

as covariates or predictors to better understand how and in which contexts economic stress is linked with child outcomes.

The current study contributes to a growing body of literature that demonstrates that maternal sensitivity, which is associated with a myriad of positive social and emotional outcomes for children (Leerkes, Blankson, & O'Brien, 2009), is the mechanism through which maternal stress impacts children's behavior problems and social competencies (Whittaker et al., 2010). Existing literature on young children from low-income families suggest that interactions in the microsystem, that is, interactions with parents and caregivers, are more salient for children's positive development compared to parent characteristics or influence from the macro- or exo-system.

I focused on children's social-emotional functioning as the primary outcome in this study because of the foundational nature of these skills for children's future success. Extant literature suggests that even early delays in socio-emotional functioning may remain stable and are associated with later conduct disorders, employment, education, and mental health (Campbell, Shaw, & Gilliom, 2000; Jones, Greenberg, & Crowley, 2015). Importantly, children's social skills were measured when children were three years old, a time when self-regulation is emerging and children are increasingly noncompliant with their parents (Kuczynski & Kochanska, 1990). While normative for children to display noncompliance, I used maternal reports of children's behavior and social competencies in the home, and maternal report of children's behavior is often associated with their own functioning. That is, existing literature suggests that mothers who experience higher levels of stress are

more likely to report their child as more deviant (Pett, Vaughncole, & Wampold, 1994) or have more externalizing problems (Qi & Kaiser 2003). As such, it may be that mothers who are less stressed and more sensitive in their interactions with children view their child's behavior as less negative compared to mothers who are more stressed and less sensitive. Future work should aim to include diverse reporters of children's behavior problems and social competencies.

Contrary to my hypothesis, I found no evidence that maternal intrusiveness mediated the association between economic stress and children's social skills, even though parenting stress at age 1 was positively associated with intrusiveness at age 2 and intrusiveness was in turn negatively associated with child social competence and positively associated with behavior problems at age 3 (at the bivariate level). In this study, intrusiveness was conceptualized as over-involvement and over-control, which may not capture the broad spectrum of intrusive behavior that is often associated with poor child outcomes (Egeland, Pianta, & O'Brien, 1993). However, some research with low-income ethnically diverse families with toddlers shows that intrusiveness is not always associated with poor child outcomes, especially when done in the context of a warmth (Carlson & Harwood, 2003; Ispa et al., 2004). That is, research with African American and Latino mothers shows that intrusiveness is not always associated with children's poor socio-emotional development, and suggests that existing measures of intrusiveness may not be culturally sensitive for non-White children. Given the observed ethnic and cultural variations in intrusiveness, it may be that, in this sample, intrusiveness was not as salient an indicator of parenting as sensitivity was. Moreover, this study focused on two specific indicators of parenting,

but there are likely others that mediate the association between economic and parenting stress and children's social skills. More research is needed to better understand which indicators of parenting function as a mechanism through which economic stress undermines children's social skills.

A Test of the Stress Buffering Model

The second goal of this study was to examine whether specific types of social support (emotional and instrumental) moderated the associations among mothers' economic and parenting stress and their parenting quality. However, economic stress was not directly associated with maternal sensitivity and intrusiveness, so it was unsurprising that the interaction terms were not significant predictors of parenting quality, either.

Instrumental and emotional support also did not moderate, or attenuate, the negative association between parenting stress and maternal sensitivity or the positive association between parenting stress and intrusiveness. This finding is at odds with some of the existing literature on the buffering role of social support against parenting stress (Crnic & Greenberg, 1990; Heberle et al 2015; Rodgers, 1998).

The lack of support of the stress buffering model could be due to several factors. First, the measurement of social support is inconsistent across studies, and support can measured in a myriad of ways. Moreover, some studies emphasize sources of support over types (Brown & Lynn, 2010; Crnic et al., 1983). In this study, social support was measured using 13 items created by the Baby FACES research team designed to quantify instrumental and emotional support. However, the scale and the items were not from an empirically tested and validated measure. Therefore,

while some evidence suggests that social support is a key determinant of parenting (Crnic & Low, 2002) and is associated with sensitive parenting in low-income families (Barnett, 2008), it may be dependent on how social support is measured. Moreover, this measure did not allow for the assessment as to whether or not social support was a source of stress for mothers, and whether or not it reinforced more negative parenting practices. Some research suggests that mothers who receive social support that reinforces harsher parenting may lead to the proliferation of child abuse (Freisthler et al., 2014) or may be a source of stress in itself if it is given in the context of criticism (Raikes & Thompson, 2005). It is possible that some mothers in this study did not find the social support they received to be helpful, thus potentially obscuring the buffering effect noted in other literature. Finally, mothers in this sample reported above average levels of social support, yet 70% reported desiring more support in the future. It may be that the social support questions used in this survey did not adequately capture mothers' perceptions of their support given their desire to have more. A key step for future research is to conceptualize a comprehensive measure of social support that includes multiple types and sources of support, as well as a component that measures how social support is perceived.

The lack of evidence for the stress buffering model may also be due to the sample itself. As noted previously, mothers in this sample reported above average levels of support, contrasting existing research demonstrating that low-income individuals perceive less social support compared to higher income individuals (Antonucci, 2001). Yet one study found that low-income individuals with larger support networks were more likely to use mental health services compared to those

with less support (Kang et al., 2007). Whether or not mothers with more support seek out programs like EHS or if programs like EHS build mothers' social support is unclear. It may be that programs like EHS, which aim to support mothers in their role as parents, attract mothers who are already better at seeking out and cultivating support networks. This hypothesis is in line with previous research of mothers with children participating in HS that suggested participation might be related to a greater ability to reap benefits from relationship with friends and family among low-income mothers (Lee & Rispoli, 2017). Overall, participation in EHS may be a confounding factor when testing the role of social support as a protective factor.

Finally, some research does not find support for the stress buffering model (Burton, Stice, & Seeley, 2004; Manuel et al., 2012). It may be that while social support is clearly important for families experiencing economic stress, more formal, financial supports or other protective factors are more valuable for alleviating the negative effects of economic and parenting stress on parenting. Even so, these findings add to the literature on the stress buffering model by testing it with a low-income, ethnically diverse sample and a longitudinal design.

Policy and Practice Implications

The families involved in this study were participants in the EHS program, which is designed to promote positive child development while also supporting parents in their role as caregivers. The results of this study suggest that both parenting stress and maternal sensitivity can mediate the effect of economic stress on young children's socio-emotional outcomes. Though effects were small, these findings reinforce efforts to broaden policies aimed at supporting children by incorporating

services and funding streams that that allow for interventions that promote warm, sensitive parenting and reduce economic stressors. Policies should also aim to prevent mothers from experiencing economic stress in the first place.

I also found a lack of support for the stress buffering model, specifically, that the presence of social support did not attenuate the association between stressors and parenting. Mothers in this sample reported having adequate levels of support, which may be an effect of EHS or an effect of self-selection into the program. In any case, these findings suggest that instead of counterbalancing stressors with social support, efforts should be made to eliminate or diminish economic and parenting stress. Screening parents for stress at the outset of the program could help identify mothers at risk for stress. EHS programming could also target other factors, like maternal mental health, as maternal depressive symptomatology was associated with both economic and parenting stress as well as child behavior problems in this study. At the practice level, some successful interventions have targeted parental depression (e.g., Sanders & McFarland, 2000), though there is also evidence that parenting interventions may reduce parenting stress as well (Caldwell, Horne, Davison, & Quinn, 2007). As such, interventions that target parenting functioning broadly should be considered for EHS programming.

I focused on children's social-emotional functioning as the primary outcome in this study because of the foundational nature of these skills for children's future success. Extant literature suggests that even early delays in socio-emotional functioning may remain stable and are associated with later conduct disorders, employment, education, and mental health (Campbell, Shaw, & Gilliom, 2000; Jones,

Greenberg, & Crowley, 2015). Moreover, a large body of literature suggests that parenting plays an important role in children's socio-emotional development, with sensitive, warm parenting being the most promotive (Tamis-LeMonda, Briggs, McClowry, & Snow, 2009). Interventions targeting children's behavior problems and social competencies have already been effectively implemented in HS classrooms (Raver, et al., 2009) and should continue to be adapted and integrated for EHS settings.

Limitations and Future Directions

Though this study contributed to the literature on the mechanisms that link stress experienced by the parent to child outcomes, there are limitations that must be acknowledged. First, the Baby FACES project faced significant attrition over time, limiting the results to children enrolled in EHS in 2009 and who received the full dosage (three years) of the program.

Further, there were some measurement concerns that typically accompany the use of secondary data. Both social support and economic stress were measured using items either drawn from other scales or created for the purpose of the Baby FACES survey. While the reliability of these scales was good, the use of established and cross-culturally validated measures is preferential. Moreover, many of the study variables relied on mother report across a range of constructs. Namely, mothers reported on stressors, supports, and child social skills, increasing the likelihood of shared variance. Furthermore, economic stress and parenting stress were measured at the same time, which has implications for the interpretability of the meditation findings. Finally, the measure of social support did not address whether or not

mothers found the provision of support as more stressful rather than helpful, potentially obscuring the negative side of social support. More research is needed to understand the ways in which social support functions as a protective factor in diverse samples and measurement development around social support as a construct is sorely needed.

Additionally, the Baby FACES project did not include fathers, which limits our understanding to only the mechanisms that link maternal experiences of stress to child outcomes. Existing literature suggests that father's contribution to children's social development is independent from mothers, and therefore excluding fathers may underestimate total parental effects (Cabrera, Shannon, & Tamis-Lemonda, 2007; Paquette, 2004). Roughly half of the children in this study lived with their biological fathers, and therefore an important next step is to test whether these pathways are similar for fathers.

Finally, while this study was the first to draw on both the Family Stress Model and the Stress Buffering Model to test the influences of early stress and support on parenting and children's social development, there was a lack of evidence in support of the integration of both models. However, I caution against interpreting this lack of evidence as an absence of a promising path for future work. There are many reasons why social support, as measured in this study, was not an effective buffer against the negative effects of parenting stress on indicators of parent quality. First, mothers reported relatively high levels of both instrumental and emotional support while also expressing a desire for more support in the future. As such, this measure may not be sensitive enough to capture to social support needs of mothers in this sample. On the

other hand, it may be that social support is a construct that is continually desired regardless of current status. That is, it may be that most people express a desire for more support regardless of their current level of support. Second, mothers reported relatively low levels of parenting stress. As noted previously, this may be due to the a selection bias, such that mothers enrolled in EHS may be higher functioning that other low-income mothers who do not have children enrolled in the program. That is, mothers with children enrolled in EHS may have higher levels of support and lower levels of stress compared to their non-EHS counterparts. In any case, some research suggests that social support only operates as a buffer for mothers who experience clinical levels of distress (e.g., Aslund, Larm, Starrin, & Nilsson, 2014; Ayala-Nunes, Nunes, & Lemos, 2017). Given the relatively low levels of parenting stress in this sample, it may be that only for mothers who experience clinically high levels of parenting stress or high levels of economic stress does social support operate as a buffer. Moreover, as noted above, some research suggests that mothers who experience elevated levels of stress are more likely to inflate their child's problem behavior in reports. Therefore, a fruitful next step may be to fully integrate the two models to better understand both how these pathways operate for mothers with children from diverse samples (EHS and otherwise) and for whom and in what context social support operates as a buffer against the negative effects of stress.

Conclusions

The goal of this study was to examine the mechanisms through which economic stress experienced by the parent was related to children's socio-emotional development. A secondary goal was to test whether social support buffered the

negative effects of stress on parenting. Using a theory-based structural equation model and a longitudinal design, this study tested the mediating role of parenting stress, maternal sensitivity, and maternal intrusiveness in the link between economic stress and social competence and behavior problems in toddlers enrolled in EHS. Results suggested that economic stress was indeed related to children's problem behavior and social competence indirectly, though neither instrumental nor emotional support served as a buffer against either type of stressor.

These findings provide further evidence that economic stress has an indirect effect on children's socio-emotional outcomes. Further, indicators of mothers' mental health and parenting quality, in this case parenting stress and maternal sensitivity, can be thought of as mechanisms through which economic stress compromises children's functioning. From a strengths-based perspective, results suggest the experience of warm, sensitive interactions are related to a reduction in child behavior problems and an increase in social competence even in the context of economic and parenting stress.

The present study broadens our understanding of this area of research in three specific ways; (1) by testing multiple types of stressors and support, (2) drawing from a low-income, ethnically diverse sample of mothers with children enrolled in a federally funded program, and (3) taking a longitudinal approach to better understand the longitudinal associations of early parental stress on later child social development.

In the context of programs that serve low-income children and families like EHS, efforts to support child development and parents' in their role as caregivers can be supplemented with interventions aimed at reducing economic and parenting stress

and promoting parenting quality. Though social support was not a buffer against the negative effects of stress on parenting in this study, these results imply that when families are already poor, social support alone may not alleviate the negative effects of economic and parenting stress on parenting. Still, future work must take an ecological approach that emphasizes the import of numerous risk and protective factors that while show small effects independently, work in concert to shape the family processes and mechanisms that inform child development.

Appendices

Appendix A: Economic Stress Scale

The economic stress scale is a sum of 5 questions about financial security and 5 questions about food insecurity, separated out below. For the food insecurity questions, mothers who reported "often" or "sometimes" received a score of 1; mothers who reported never received a score of 0.

[Interviewer: "Now I have some questions about how things are going for you these days. Please tell me if there has been a time in the past year when your household [INSERT a-e] . . .**."]**

	Financial Security	Yes	No	Don't Know	Refused
a.	could not pay the full amount of the rent or mortgage that you were supposed to pay.	1	0	D	R
b.	was evicted from your home or apartment.	1	0	D	R
c.	could not pay the full amount of the gas, oil, or electricity bills.	1	0	D	R
d.	had service turned off by the gas or electric company, or oil company would not deliver oil.	1	0	D	R
e.	had service disconnected by the telephone company because payments were not made.	1	0	d	R

[Interviewer: "I am going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months, that is, since last [CURRENT MONTH].

	Food insecurity	Often	Sometimes	Never	Don't Know	Refused
a.	I/We) worried whether (my/our) food would run out before (I/we) got money to buy more.	2	1	0	D	R
b.	The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more.	2	1	0	D	R
c.	(I/We) couldn't afford to eat balanced meals.	2	1	0	D	R
d.	(I/We) relied on only a few kinds of low-cost food to feed the children because (I was/we were)	2	1	0	D	R

	running out of money to buy food.					
e.	(I/We) couldn't feed the children a balanced meal because (I/we) couldn't afford that.	2	1	0	D	R

Appendix B: Instrumental and Emotional Support Scale

The social support scale has two types: instrumental support and emotional support. The instrumental support score is the average score of the 7 items below under "instrumental support." The emotional support score is the average of the 6 items below under "emotional support."

Interviewer: The next questions are about how you solve problems and who you turn to for help.

For each question, please tell me whether it applies to you all or most of the time, sometimes, or not at all. Is there someone who you can count on to help you with [FILL ITEM a-g]

	Instrumental Support	All or Most of the Time	Sometimes	Not at all	Don't Know	Refused
a.	Food shopping?	3	2	1	D	R
b.	Planning and cooking meals?	3	2	1	D	R
c.	Cleaning the house?	3	2	1	D	R
d.	Handling the bills?	3	2	1	D	R
e.	Deciding how the money should be spent?	3	2	1	D	R
f.	Taking care of the children?	3	2	1	D	R
g.	Disciplining the children?	3	2	1	D	R

Is there someone who you can count on to [FILL ITEM h-m]…

	Emotional Support	All or Most of the Time	Sometimes	Not at all	Don't Know	Refused
h.	Comfort you when you are sad?	3	2	1	D	R
i.	Take care of you when you are sick?	3	2	1	D	R
j.	Have fun with?	3	2	1	D	R
k.	Talk with you about things that upset you?	3	2	1	D	R
l.	Talk with you about your private feelings?	3	2	1	D	R
m.	Tell you that you are okay the way you are?	3	2	1	D	R

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